

# Iron and Steel Mills

# 1997

Issued October 1999

EC97M-3311A

## 1997 Economic Census

*Manufacturing*

Industry Series



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**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.



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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331111</b>	<b>Iron &amp; steel mills</b> .....	<b>197</b>	<b>279</b>	<b>146 532</b>	<b>7 469 223</b>	<b>115 141</b>	<b>252 954</b>	<b>5 667 412</b>	<b>24 628 672</b>	<b>32 625 569</b>	<b>57 068 867</b>	<b>2 774 566</b>
331220	Blast furnaces & steel mills (pt) .....	N	193	144 081	7 373 040	113 571	249 969	5 617 310	24 358 895	32 296 737	56 469 035	2 742 825
339910	Primary metal products, n.e.c. (pt) .....	N	86	2 451	96 183	1 570	2 985	50 102	269 777	328 832	599 832	31 741

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.  
<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331111, IRON &amp; STEEL MILLS</b>												
<b>United States</b> .....	-	<b>279</b>	<b>213</b>	<b>146 532</b>	<b>7 469 223</b>	<b>115 141</b>	<b>252 954</b>	<b>5 667 412</b>	<b>24 628 672</b>	<b>32 625 569</b>	<b>57 068 867</b>	<b>2 774 566</b>
Illinois .....	-	19	18	10 903	483 485	9 001	19 444	379 548	1 193 019	2 397 775	3 583 475	139 735
Indiana .....	-	18	15	30 605	1 689 945	23 336	51 383	1 291 283	5 204 237	6 148 733	11 298 600	696 486
Ohio .....	-	24	21	22 764	1 199 146	18 610	41 156	929 147	5 490 376	4 673 161	10 088 697	317 932
Tennessee .....	-	9	6	786	33 254	616	1 269	22 577	183 269	249 815	424 964	6 848
Texas .....	-	12	9	5 017	219 311	3 865	8 728	160 323	699 155	1 520 237	2 277 730	100 786

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331111, IRON &amp; STEEL MILLS</b>		<b>331111, IRON &amp; STEEL MILLS—Con.</b>	
Companies <sup>1</sup> .....	number.. 197	<b>3311111, Iron &amp; steel mills—fully integrated—Con.</b>	
All establishments .....	number.. 279	Production-worker hours .....	1,000.. 119 980
Establishments with 1 to 19 employees .....	number.. 66	Production-worker wages .....	\$1,000.. 2 849 664
Establishments with 20 to 99 employees .....	number.. 51	Total cost of materials .....	\$1,000.. 13 373 471
Establishments with 100 employees or more .....	number.. 162	Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 10 063 982
All employees .....	number.. 146 532	Cost of resales .....	\$1,000.. 630
Total compensation <sup>2</sup> .....	\$1,000.. 10 595 307	Cost of fuels .....	\$1,000.. 1 196 370
Annual payroll .....	\$1,000.. 7 469 223	Cost of purchased electricity .....	\$1,000.. 519 815
Total fringe benefits .....	\$1,000.. 3 126 084	Cost of contract work .....	\$1,000.. 1 592 674
Production workers, average for year .....	number.. 115 141	Quantity of electricity purchased for heat and power .....	1,000 kWh.. 13 410 449
Production workers on March 12 .....	number.. 115 129	Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. 3 695 063
Production workers on May 12 .....	number.. 114 480	Total value of shipments .....	\$1,000.. 26 385 617
Production workers on August 12 .....	number.. 115 664	Primary products value of shipments .....	\$1,000.. X
Production workers on November 12 .....	number.. 115 291	Secondary products value of shipments .....	\$1,000.. X
Production-worker hours .....	1,000.. 252 954	Total miscellaneous receipts .....	\$1,000.. X
Production-worker wages .....	\$1,000.. 5 667 412	Value of resales .....	\$1,000.. X
Total cost of materials .....	\$1,000.. 32 625 569	Contract receipts .....	\$1,000.. X
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 26 976 978	Other miscellaneous receipts .....	\$1,000.. X
Cost of resales .....	\$1,000.. 56 639	Primary products specialization ratio .....	percent.. X
Cost of fuels .....	\$1,000.. 1 841 128	Value of primary products shipments made in all industries .....	\$1,000.. X
Cost of purchased electricity .....	\$1,000.. 1 689 199	Value of primary products shipments made in this industry .....	\$1,000.. X
Cost of contract work .....	\$1,000.. 2 061 625	Value of primary products shipments made in other industries .....	\$1,000.. X
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 44 771 212	Coverage ratio .....	percent.. X
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. 3 656 108	Value added .....	\$1,000.. 13 090 116
Total value of shipments .....	\$1,000.. 57 068 867	Total inventories, beginning of year .....	\$1,000.. 4 138 034
Primary products value of shipments .....	\$1,000.. 55 347 068	Finished goods inventories, beginning of year .....	\$1,000.. 1 539 803
Secondary products value of shipments .....	\$1,000.. 1 228 769	Work-in-process inventories, beginning of year .....	\$1,000.. 1 260 539
Total miscellaneous receipts .....	\$1,000.. 493 030	Materials and supplies inventories, beginning of year .....	\$1,000.. 1 337 692
Value of resales .....	\$1,000.. 64 324	Total inventories, end of year .....	\$1,000.. 4 228 518
Contract receipts .....	\$1,000.. 172 772	Finished goods inventories, end of year .....	\$1,000.. 1 536 478
Other miscellaneous receipts .....	\$1,000.. 255 934	Work-in-process inventories, end of year .....	\$1,000.. 1 341 834
Primary products specialization ratio .....	percent.. 97	Materials and supplies inventories, end of year .....	\$1,000.. 1 350 206
Value of primary products shipments made in all industries .....	\$1,000.. 56 427 724	Gross book value of total assets at beginning of year .....	\$1,000.. X
Value of primary products shipments made in this industry .....	\$1,000.. 55 347 068	Total capital expenditures (new and used) .....	\$1,000.. X
Value of primary products shipments made in other industries .....	\$1,000.. 1 080 656	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. X
Coverage ratio .....	percent.. 98	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. X
Value added .....	\$1,000.. 24 628 672	Total retirements <sup>2</sup> .....	\$1,000.. X
Total inventories, beginning of year .....	\$1,000.. 8 975 922	Gross book value of total assets at end of year .....	\$1,000.. X
Finished goods inventories, beginning of year .....	\$1,000.. 2 997 909	Total depreciation during year <sup>2</sup> .....	\$1,000.. X
Work-in-process inventories, beginning of year .....	\$1,000.. 2 994 762	Total rental payments <sup>2</sup> .....	\$1,000.. X
Materials and supplies inventories, beginning of year .....	\$1,000.. 2 983 251	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. X
Total inventories, end of year .....	\$1,000.. 9 217 925	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. X
Finished goods inventories, end of year .....	\$1,000.. 3 097 863	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. X
Work-in-process inventories, end of year .....	\$1,000.. 3 080 182	Response coverage ratio <sup>4</sup> .....	percent.. X
Materials and supplies inventories, end of year .....	\$1,000.. 3 039 880	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. X
Gross book value of total assets at beginning of year .....	\$1,000.. 35 261 038	Response coverage ratio <sup>4</sup> .....	percent.. X
Total capital expenditures (new and used) .....	\$1,000.. 2 774 566	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. X
Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 205 679	Response coverage ratio <sup>4</sup> .....	percent.. X
Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 2 568 887	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. X
Total retirements <sup>2</sup> .....	\$1,000.. 849 499	Response coverage ratio <sup>4</sup> .....	percent.. X
Gross book value of total assets at end of year .....	\$1,000.. 37 186 105	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. X
Total depreciation during year <sup>2</sup> .....	\$1,000.. 1 967 946	Response coverage ratio <sup>4</sup> .....	percent.. X
Total rental payments <sup>2</sup> .....	\$1,000.. 274 044	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. X
Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 16 406	Response coverage ratio <sup>4</sup> .....	percent.. X
Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 257 638	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. X
Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 119 091	Response coverage ratio <sup>4</sup> .....	percent.. X
Response coverage ratio <sup>4</sup> .....	percent.. 75	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. X
Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 1 466 890	Response coverage ratio <sup>4</sup> .....	percent.. X
Response coverage ratio <sup>4</sup> .....	percent.. 75	<b>3311112, Iron &amp; steel mills—partially integrated with blast furnace</b>	
Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 34 113	Companies <sup>1</sup> .....	number.. N
Response coverage ratio <sup>4</sup> .....	percent.. 75	All establishments .....	number.. 4
Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 40 285	Establishments with 1 to 19 employees .....	number.. —
Response coverage ratio <sup>4</sup> .....	percent.. 75	Establishments with 20 to 99 employees .....	number.. —
Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 10 000	Establishments with 100 employees or more .....	number.. 4
Response coverage ratio <sup>4</sup> .....	percent.. 75	All employees .....	number.. 9 065
Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 10 181	Total compensation <sup>2</sup> .....	\$1,000.. 671 293
Response coverage ratio <sup>4</sup> .....	percent.. 75	Annual payroll .....	\$1,000.. 420 501
Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 93 493	Total fringe benefits .....	\$1,000.. 250 792
Response coverage ratio <sup>4</sup> .....	percent.. 75	Production workers, average for year .....	number.. 7 479
Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 188 880	Production workers on March 12 .....	number.. 6 631
Response coverage ratio <sup>4</sup> .....	percent.. 75	Production workers on May 12 .....	number.. 7 133
<b>3311111, Iron &amp; steel mills—fully integrated</b>		Production workers on August 12 .....	number.. 8 206
Companies <sup>1</sup> .....	number.. N	Production workers on November 12 .....	number.. 7 946
All establishments .....	number.. 17	Production-worker hours .....	1,000.. 13 792
Establishments with 1 to 19 employees .....	number.. —	Production-worker wages .....	\$1,000.. 326 865
Establishments with 20 to 99 employees .....	number.. —	Total cost of materials .....	\$1,000.. 1 800 508
Establishments with 100 employees or more .....	number.. 17	Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 1 509 833
All employees .....	number.. 67 927	Cost of resales .....	\$1,000.. —
Total compensation <sup>2</sup> .....	\$1,000.. 5 430 830	Cost of fuels .....	\$1,000.. 124 908
Annual payroll .....	\$1,000.. 3 693 274	Cost of purchased electricity .....	\$1,000.. 70 445
Total fringe benefits .....	\$1,000.. 1 737 556	Cost of contract work .....	\$1,000.. 95 322
Production workers, average for year .....	number.. 53 270	Quantity of electricity purchased for heat and power .....	1,000 kWh.. 2 059 536
Production workers on March 12 .....	number.. 53 666	Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. D
Production workers on May 12 .....	number.. 53 101		
Production workers on August 12 .....	number.. 53 083		
Production workers on November 12 .....	number.. 53 230		

**Table 3. Detailed Statistics by Industry: 1997—Con.**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331111, IRON &amp; STEEL MILLS—Con.</b>		<b>331111, IRON &amp; STEEL MILLS—Con.</b>	
<b>3311112, Iron &amp; steel mills—partially integrated with blast furnace—Con.</b>		<b>3311113, Iron &amp; steel mills—partially integrated without blast furnace—Con.</b>	
Total value of shipments	\$1,000.. 2 700 238	Value of primary products shipments made in all industries	\$1,000.. X
Primary products value of shipments	\$1,000.. X	Value of primary products shipments made in this industry	\$1,000.. X
Secondary products value of shipments	\$1,000.. X	Value of primary products shipments made in other industries	\$1,000.. X
Total miscellaneous receipts	\$1,000.. X	Coverage ratio	percent.. X
Value of resales	\$1,000.. X	Value added	\$1,000.. 7 471 903
Contract receipts	\$1,000.. X	Total inventories, beginning of year	\$1,000.. 3 073 637
Other miscellaneous receipts	\$1,000.. X	Finished goods inventories, beginning of year	\$1,000.. 989 346
Primary products specialization ratio	percent.. X	Work-in-process inventories, beginning of year	\$1,000.. 1 105 106
Value of primary products shipments made in all industries	\$1,000.. X	Materials and supplies inventories, beginning of year	\$1,000.. 979 185
Value of primary products shipments made in this industry	\$1,000.. X	Total inventories, end of year	\$1,000.. 3 184 812
Value of primary products shipments made in other industries	\$1,000.. X	Finished goods inventories, end of year	\$1,000.. 1 023 905
Coverage ratio	percent.. X	Work-in-process inventories, end of year	\$1,000.. 1 072 905
Value added	\$1,000.. 921 930	Materials and supplies inventories, end of year	\$1,000.. 1 088 002
Total inventories, beginning of year	\$1,000.. 411 466	Gross book value of total assets at beginning of year	\$1,000.. X
Finished goods inventories, beginning of year	\$1,000.. 15 445	Total capital expenditures (new and used)	\$1,000.. X
Work-in-process inventories, beginning of year	\$1,000.. 216 707	Capital expenditures for buildings and other structures (new and used)	\$1,000.. X
Materials and supplies inventories, beginning of year	\$1,000.. 179 314	Capital expenditures for machinery and equipment (new and used)	\$1,000.. X
Total inventories, end of year	\$1,000.. 422 964	Total retirements <sup>2</sup>	\$1,000.. X
Finished goods inventories, end of year	\$1,000.. 14 711	Gross book value of total assets at end of year	\$1,000.. X
Work-in-process inventories, end of year	\$1,000.. 239 641	Total depreciation during year <sup>2</sup>	\$1,000.. X
Materials and supplies inventories, end of year	\$1,000.. 168 612	Total rental payments <sup>2</sup>	\$1,000.. X
Gross book value of total assets at beginning of year	\$1,000.. X	Buildings and other structures rental payments <sup>2</sup>	\$1,000.. X
Total capital expenditures (new and used)	\$1,000.. X	Machinery and equipment rental payments <sup>2</sup>	\$1,000.. X
Capital expenditures for buildings and other structures (new and used)	\$1,000.. X	Cost of purchased services for the repair of buildings and other structures <sup>3</sup>	\$1,000.. X
Capital expenditures for machinery and equipment (new and used)	\$1,000.. X	Response coverage ratio <sup>4</sup>	percent.. X
Total retirements <sup>2</sup>	\$1,000.. X	Cost of purchased services for the repair of machinery and equipment <sup>3</sup>	\$1,000.. X
Gross book value of total assets at end of year	\$1,000.. X	Response coverage ratio <sup>4</sup>	percent.. X
Total depreciation during year <sup>2</sup>	\$1,000.. X	Cost of purchased communications services <sup>3</sup>	\$1,000.. X
Total rental payments <sup>2</sup>	\$1,000.. X	Response coverage ratio <sup>4</sup>	percent.. X
Buildings and other structures rental payments <sup>2</sup>	\$1,000.. X	Cost of purchased legal services <sup>3</sup>	\$1,000.. X
Machinery and equipment rental payments <sup>2</sup>	\$1,000.. X	Response coverage ratio <sup>4</sup>	percent.. X
Cost of purchased services for the repair of buildings and other structures <sup>3</sup>	\$1,000.. X	Cost of purchased accounting and bookkeeping services <sup>3</sup>	\$1,000.. X
Response coverage ratio <sup>4</sup>	percent.. X	Response coverage ratio <sup>4</sup>	percent.. X
Cost of purchased services for the repair of machinery and equipment <sup>3</sup>	\$1,000.. X	Cost of purchased advertising services <sup>3</sup>	\$1,000.. X
Response coverage ratio <sup>4</sup>	percent.. X	Response coverage ratio <sup>4</sup>	percent.. X
Cost of purchased communications services <sup>3</sup>	\$1,000.. X	Cost of purchased software and other data processing services <sup>3</sup>	\$1,000.. X
Response coverage ratio <sup>4</sup>	percent.. X	Response coverage ratio <sup>4</sup>	percent.. X
Cost of purchased legal services <sup>3</sup>	\$1,000.. X	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup>	\$1,000.. X
Response coverage ratio <sup>4</sup>	percent.. X	Response coverage ratio <sup>4</sup>	percent.. X
Cost of purchased accounting and bookkeeping services <sup>3</sup>	\$1,000.. X	<b>3311114, Iron &amp; steel mills—nonintegrated</b>	
Response coverage ratio <sup>4</sup>	percent.. X	Companies <sup>1</sup>	number.. N
Cost of purchased advertising services <sup>3</sup>	\$1,000.. X	All establishments	number.. 178
Response coverage ratio <sup>4</sup>	percent.. X	Establishments with 1 to 19 employees	number.. 66
Cost of purchased software and other data processing services <sup>3</sup>	\$1,000.. X	Establishments with 20 to 99 employees	number.. 49
Response coverage ratio <sup>4</sup>	percent.. X	Establishments with 100 employees or more	number.. 63
Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup>	\$1,000.. X	All employees	number.. 21 749
Response coverage ratio <sup>4</sup>	percent.. X	Total compensation <sup>2</sup>	\$1,000.. 1 321 443
<b>3311113, Iron &amp; steel mills—partially integrated without blast furnace</b>		Annual payroll	\$1,000.. 970 820
Companies <sup>1</sup>	number.. N	Total fringe benefits	\$1,000.. 350 623
All establishments	number.. 80	Production workers, average for year	number.. 16 707
Establishments with 1 to 19 employees	number.. 80	Production workers on March 12	number.. 16 763
Establishments with 20 to 99 employees	number.. 2	Production workers on May 12	number.. 16 898
Establishments with 100 employees or more	number.. 2	Production workers on August 12	number.. 16 739
All employees	number.. 47 791	Production workers on November 12	number.. 16 428
Total compensation <sup>2</sup>	\$1,000.. 3 171 741	Production-worker hours	1,000.. 36 148
Annual payroll	\$1,000.. 2 384 628	Production-worker wages	\$1,000.. 708 485
Total fringe benefits	\$1,000.. 787 113	Total cost of materials	\$1,000.. 5 581 318
Production workers, average for year	number.. 37 685	Cost of materials, parts, containers, etc., consumed	\$1,000.. 5 078 621
Production workers on March 12	number.. 38 069	Cost of resales	\$1,000.. 14 342
Production workers on May 12	number.. 37 348	Cost of fuels	\$1,000.. 160 017
Production workers on August 12	number.. 37 636	Cost of purchased electricity	\$1,000.. 168 891
Production workers on November 12	number.. 37 687	Cost of contract work	\$1,000.. 159 447
Production-worker hours	1,000.. 83 034	Quantity of electricity purchased for heat and power	1,000 kWh.. 3 146 435
Production-worker wages	\$1,000.. 1 782 398	Quantity of electricity generated less sold for heat and power	1,000 kWh.. D
Total cost of materials	\$1,000.. 11 870 272	Total value of shipments	\$1,000.. 8 643 195
Cost of materials, parts, containers, etc., consumed	\$1,000.. 10 324 542	Primary products value of shipments	\$1,000.. X
Cost of resales	\$1,000.. 41 667	Secondary products value of shipments	\$1,000.. X
Cost of fuels	\$1,000.. 359 833	Total miscellaneous receipts	\$1,000.. X
Cost of purchased electricity	\$1,000.. 930 048	Value of resales	\$1,000.. X
Cost of contract work	\$1,000.. 214 182	Contract receipts	\$1,000.. X
Quantity of electricity purchased for heat and power	1,000 kWh.. 26 154 792	Other miscellaneous receipts	\$1,000.. X
Quantity of electricity generated less sold for heat and power	1,000 kWh.. D	Primary products specialization ratio	percent.. X
Total value of shipments	\$1,000.. 19 339 817	Value of primary products shipments made in all industries	\$1,000.. X
Primary products value of shipments	\$1,000.. X	Value of primary products shipments made in this industry	\$1,000.. X
Secondary products value of shipments	\$1,000.. X	Value of primary products shipments made in other industries	\$1,000.. X
Total miscellaneous receipts	\$1,000.. X	Coverage ratio	percent.. X
Value of resales	\$1,000.. X	Value added	\$1,000.. 3 144 723
Contract receipts	\$1,000.. X	Total inventories, beginning of year	\$1,000.. 1 352 785
Other miscellaneous receipts	\$1,000.. X	Finished goods inventories, beginning of year	\$1,000.. 453 315
Primary products specialization ratio	percent.. X	Work-in-process inventories, beginning of year	\$1,000.. 412 410
		Materials and supplies inventories, beginning of year	\$1,000.. 487 060

**Table 3. Detailed Statistics by Industry: 1997—Con.**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331111, IRON &amp; STEEL MILLS—Con.</b>		<b>331111, IRON &amp; STEEL MILLS—Con.</b>	
		<b>3311114, Iron &amp; steel mills—nonintegrated—Con.</b>	
<b>3311114, Iron &amp; steel mills—nonintegrated—Con.</b>		Total rental payments <sup>2</sup> .....	\$1,000.. X
		Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. X
		Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. X
Total inventories, end of year .....	\$1,000.. 1 381 631	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. X
Finished goods inventories, end of year .....	\$1,000.. 522 769	Response coverage ratio <sup>4</sup> .....	percent.. X
Work-in-process inventories, end of year .....	\$1,000.. 425 802	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. X
Materials and supplies inventories, end of year .....	\$1,000.. 433 060	Response coverage ratio <sup>4</sup> .....	percent.. X
Gross book value of total assets at beginning of year .....	\$1,000.. X	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. X
Total capital expenditures (new and used) .....	\$1,000.. X	Response coverage ratio <sup>4</sup> .....	percent.. X
Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. X	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. X
Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. X	Response coverage ratio <sup>4</sup> .....	percent.. X
Total retirements <sup>2</sup> .....	\$1,000.. X	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. X
Gross book value of total assets at end of year .....	\$1,000.. X	Response coverage ratio <sup>4</sup> .....	percent.. X
Total depreciation during year <sup>2</sup> .....	\$1,000.. X	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. X
		Response coverage ratio <sup>4</sup> .....	percent.. X
		Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. X
		Response coverage ratio <sup>4</sup> .....	percent.. X
		Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. X
		Response coverage ratio <sup>4</sup> .....	percent.. X

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331111, IRON &amp; STEEL MILLS</b>												
<b>All establishments</b> .....	-	<b>279</b>	<b>213</b>	<b>146 532</b>	<b>7 469 223</b>	<b>115 141</b>	<b>252 954</b>	<b>5 667 412</b>	<b>24 628 672</b>	<b>32 625 569</b>	<b>57 068 867</b>	<b>2 774 566</b>
Establishments with 1 to 4 employees .....	8	35	-	62	1 752	47	65	950	5 600	6 490	12 066	1 990
Establishments with 5 to 9 employees .....	9	15	-	94	2 588	53	80	1 330	7 076	7 609	14 673	1 878
Establishments with 10 to 19 employees .....	3	16	-	224	7 323	158	287	4 401	31 403	37 804	72 945	2 779
Establishments with 20 to 49 employees .....	1	32	32	955	32 763	723	1 330	22 105	124 959	213 532	337 747	12 866
Establishments with 50 to 99 employees .....	-	19	19	1 283	51 698	852	1 822	30 285	169 343	306 202	486 096	17 603
Establishments with 100 to 249 employees .....	-	51	51	8 376	343 302	6 286	13 932	233 490	1 226 384	1 987 909	3 175 427	113 350
Establishments with 250 to 499 employees .....	-	55	55	20 479	988 097	16 212	36 290	753 837	3 870 231	6 460 426	10 283 398	612 141
Establishments with 500 to 999 employees .....	-	24	24	17 324	876 277	13 690	29 713	667 751	2 404 918	4 426 878	6 771 123	301 008
Establishments with 1,000 to 2,499 employees .....	-	16	16	27 046	1 317 676	21 449	46 371	993 560	4 137 730	5 548 835	9 696 698	415 337
Establishments with 2,500 employees or more .....	-	16	16	70 689	3 847 747	55 671	123 064	2 959 703	12 651 028	13 629 884	26 218 694	1 295 614
Administrative records <sup>2</sup> .....	7	50	-	277	7 399	187	259	4 056	22 131	25 530	47 630	6 429

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331111</b>	<b>Iron &amp; steel mills</b> .....	<b>279</b>	<b>146 532</b>	<b>7 469 223</b>	<b>115 141</b>	<b>252 954</b>	<b>5 667 412</b>	<b>24 628 672</b>	<b>32 625 569</b>	<b>57 068 867</b>	<b>2 774 566</b>
3311111	Coke oven and blast furnace products, made in steel mills .....	14	2 731	115 582	2 287	5 069	95 820	236 326	540 977	761 386	36 302
3311112	Iron and steel powders, paste, and flakes .....	32	2 179	89 374	1 393	2 751	46 454	247 968	303 975	553 197	25 825
3311113	Steel ingots and semifinished shapes and forms .....	19	6 677	318 996	5 285	11 456	234 844	1 072 349	1 930 589	2 944 657	121 674
3311115	Hot rolled steel sheet and strip, including tin mill products, tinplate, blackplate, terneplate, and tin-free steel .....	36	65 032	3 585 796	51 653	116 790	2 827 600	13 676 649	15 462 522	29 001 804	1 449 764
3311117	Hot rolled steel bars and bar shapes, plates, structural shapes, and piling, including concrete reinforcing and tool steel bars .....	71	36 469	1 682 028	29 262	64 380	1 279 733	5 048 626	8 310 474	13 425 693	614 394
3311119	Steel wire, including galvanized and other coated wire, made in steel mills producing wire rods or hot rolled bars .....	4	492	19 752	368	712	12 679	51 233	102 143	155 442	D
331111B	Steel pipes and tubes, made in steel mills producing semifinished shapes or plate .....	9	5 784	281 708	4 542	10 326	210 137	1 260 365	980 566	2 238 463	64 366
331111D	Cold rolled steel sheet and strip, made in steel mills producing hot rolled sheet or strip .....	9	17 859	900 890	13 358	26 022	634 736	2 007 038	3 360 310	5 335 504	296 291
331111F	Cold finished steel bars and bar shapes, made in steel mills producing hot rolled bars and bar shapes .....	8	4 881	283 161	3 554	8 112	185 950	599 854	1 062 864	1 662 404	93 497
331111H	Seamless rolled ring forgings, ferrous, made in steel mills .....	2	D	D	D	D	D	D	D	D	D
331111J	Open die or smith forgings (hammer or press), ferrous, made in steel mills .....	5	D	D	D	D	D	D	D	D	D
331111L	Other steel mill products, including steel rails, except wire products .....	5	2 527	115 556	2 089	4 534	91 664	237 291	354 684	587 280	44 426



**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331111</b>	<b>Iron and steel mill products</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>56 427 724</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3311111	Coke oven and blast furnace products, made in steel mills .....	N	X	X	2 232 247	N	X	X	N
33111111	Coke oven and blast furnace products, made in steel mills .....	N	X	X	2 232 247	N	X	X	N
3311111101	Coke oven products made in steel mills, coke, except screenings and breeze \$ .....	13	15 176.1	11 313.5	937 747	N	N	N	N
3311111103	Coke oven products made in steel mills, screenings and breeze \$ .....	17	91 519.7	1 498.0	80 660	N	N	N	N
3311111105	Coke oven products made in steel mills, crude tar \$ .....	12	D	P152.7	78 938	N	N	N	N
3311111107	Coke oven products made in steel mills, crude light oil \$ .....	11	D	46.7	19 189	N	N	N	N
3311111109	Coke oven products made in steel mills, other, including tar derivatives, ammonia, light oil derivatives, and coke oven gas \$ .....	9	X	X	169 391	N	X	X	N
3311111111	Blast furnace pig iron, except ferroalloys, including pig iron with silicon content up to and including 6 percent silicon .....	6	D	D	D	3	D	D	D
3311111113	Blast furnace slag, except ferroalloys .....	6	D	D	D	6	3 674.0	P983.1	5 425
3311111115	Blast furnace sinter from ore, flue dust, blast furnace gas and other materials, except ferroalloys .....	4	X	X	95 923	N	X	X	N
3311111117	Other blast furnace products, except ferroalloys .....	4	D	D	D	6	330.1	P369.5	10 930
3311111Y	Coke oven and blast furnace products, made in steel mills, nsk .....	N	X	X	-	N	X	X	N
3311111YWV	Coke oven and blast furnace products, made in steel mills, nsk .....	N	X	X	-	N	X	X	N
3311112	Iron and steel powders, paste, and flakes .....	N	X	X	520 341	N	X	X	N
33111121	Iron and steel powders, paste, and flakes .....	N	X	X	520 341	N	X	X	N
3311112100	Iron and steel powders, paste, and flakes .....	34	X	S	520 341	N	X	X	N
3311113	Steel ingots and semifinished shapes and forms @ .....	N	X	X	4 504 723	N	X	X	3 677 756
33111131	Steel ingots and semifinished shapes and forms .....	N	X	X	4 504 723	N	X	X	N
3311113100	Steel ingots and semifinished shapes and forms .....	51	X	X	4 504 723	73	X	X	3 677 756
3311115	Hot rolled steel sheet and strip, including tin mill products, tinplate, blackplate, terneplate, and tin-free steel @ .....	N	X	X	22 163 062	N	X	X	17 284 088
33111151	Hot rolled steel sheet and strip, including tin mill products, tinplate, blackplate, terneplate, and tin-free steel .....	N	X	X	22 163 062	N	X	X	N
3311115100	Hot rolled steel sheet and strip, including tin mill products, tinplate, blackplate, terneplate, and tin-free steel .....	39	X	X	22 163 062	46	X	X	17 284 088
3311117	Hot rolled steel bars and bar shapes, plates, structural shapes, and piling, including concrete reinforcing and tool steel bars @ .....	N	X	X	13 465 065	N	X	X	10 032 507
33111171	Hot rolled steel bars and bar shapes, plates, structural shapes, and piling, including concrete reinforcing and tool steel bars .....	N	X	X	13 465 065	N	X	X	N
3311117100	Hot rolled steel bars and bar shapes, plates, structural shapes, and piling, including concrete reinforcing and tool steel bars .....	64	X	X	13 465 065	81	X	X	10 032 507
3311119	Steel wire, including galvanized and other coated wire, made in steel mills producing wire rods or hot rolled bars # .....	N	X	X	454 641	N	X	X	352 075
33111191	Steel wire, including galvanized and other coated wire, made in steel mills producing wire rods or hot rolled bars .....	N	X	X	454 641	N	X	X	N
3311119100	Steel wire, including galvanized and other coated wire, made in steel mills producing wire rods or hot rolled bars \$ .....	18	X	X	454 641	14	X	X	352 075
331111B	Steel pipes and tubes, made in steel mills producing semifinished shapes or plate # .....	N	X	X	2 575 188	N	X	X	1 692 939
331111B1	Steel pipes and tubes, made in steel mills producing semifinished shapes or plate .....	N	X	X	2 575 188	N	X	X	N
331111B100	Steel pipes and tubes, made in steel mills producing semifinished shapes or plate \$ .....	17	X	X	2 575 188	19	X	X	1 692 939

See footnotes at end of table.

**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331111</b>	<b>Iron and steel mill products— Con.</b>								
331111D	Cold rolled steel sheet and strip, made in steel mills producing hot rolled sheet or strip # .....	N	X	X	8 529 437	N	X	X	6 151 002
331111D1	Cold rolled steel sheet and strip, made in steel mills producing hot rolled sheet or strip .....	N	X	X	8 529 437	N	X	X	N
331111D100	Cold rolled steel sheet and strip, made in steel mills producing hot rolled sheet or strip \$ .....	21	X	X	8 529 437	26	X	X	6 151 002
331111F	Cold finished steel bars and bar shapes, made in steel mills producing hot rolled bars and bar shapes # .....	N	X	X	977 985	N	X	X	657 669
331111F1	Cold finished steel bars and bar shapes, made in steel mills producing hot rolled bars and bar shapes .....	N	X	X	977 985	N	X	X	N
331111F100	Cold finished steel bars and bar shapes, made in steel mills producing hot rolled bars and bar shapes \$ .....	12	X	X	977 985	13	X	X	657 669
331111H	Seamless rolled ring forgings, ferrous, made in steel mills .....	N	X	X	D	N	X	X	77 316
331111H1	Seamless carbon steel and alloy steel rolled ring forgings, excluding stainless and hi-temp, ferrous, made in steel mills .....	N	X	X	D	N	X	X	N
331111H101	Seamless carbon steel and alloy steel rolled ring forgings, excluding stainless and hi-temp, ferrous, made in steel mills \$ .....	4	X	X	D	5	X	X	46 918
331111H2	Seamless stainless steel and hi-temp (iron, nickel, or cobalt-base alloy) rolled ring forgings, ferrous, made in steel mills .....	N	X	X	D	N	X	X	N
331111H203	Seamless stainless steel and hi-temp (iron, nickel, or cobalt-base alloy) rolled ring forgings, ferrous, made in steel mills \$ .....	2	X	X	D	3	X	X	30 398
331111HY	Seamless rolled ring forgings, ferrous, made in steel mills, nsk .....	N	X	X	—	N	X	X	N
331111HYWV	Seamless rolled ring forgings, ferrous, made in steel mills, nsk .....	N	X	X	—	N	X	X	—
331111J	Open die or smith forgings (hammer or press), ferrous, made in steel mills .....	N	X	X	D	N	X	X	114 047
331111J1	Carbon and alloy steel open die or smith forgings (hammer or press), excluding stainless and hi-temp, made in steel mills .....	N	X	X	D	N	X	X	N
331111J101	Carbon and alloy steel open die or smith forgings (hammer or press), excluding stainless and hi-temp, made in steel mills \$ .....	5	X	X	D	5	X	X	107 678
331111J2	Stainless steel and hi-temp (iron, nickel, or cobalt-base alloy) open die or smith forgings (hammer or press), ferrous, made in steel mills .....	N	X	X	D	N	X	X	N
331111J203	Stainless steel and hi-temp (iron, nickel, or cobalt-base alloy) open die or smith forgings (hammer or press), ferrous, made in steel mills \$ .....	2	X	X	D	5	X	X	6 369
331111JY	Open die or smith forgings (hammer or press), ferrous, made in steel mills, nsk .....	N	X	X	—	N	X	X	N
331111JYWV	Open die or smith forgings (hammer or press), ferrous, made in steel mills, nsk .....	N	X	X	—	N	X	X	—
331111L	Other steel mill products, including steel rails, except wire products @ .....	N	X	X	587 388	N	X	X	382 762
331111L1	Other steel mill products, including steel rails, except wire products .....	N	X	X	587 388	N	X	X	N
331111L100	Other steel mill products, including steel rails, except wire products .....	12	X	X	587 388	10	X	X	382 762
331111W	Iron and steel mill products, nsk, total .....	N	X	X	131 393	N	X	X	N
331111WY	Iron and steel mill products, nsk, total .....	N	X	X	131 393	N	X	X	N
331111WYWV	Iron and steel mill products, nsk, for nonadministrative-record establishments .....	N	X	X	98 025	N	X	X	N
331111WYWY	Iron and steel mill products, nsk, for administrative-record establishments .....	N	X	X	33 368	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3311111	<b>COKE OVEN AND BLAST FURNACE PRODUCTS, MADE IN STEEL MILLS</b>		
	United States .....	<b>2 232 247</b>	<b>N</b>
	Alabama .....	410 141	N
	Indiana .....	62 299	N
	Maryland .....	74 650	N
3311112	<b>IRON AND STEEL POWDERS, PASTE, AND FLAKES</b>		
	United States .....	<b>520 341</b>	<b>N</b>
	Indiana .....	47 561	N
	Michigan .....	24 465	N
	New York .....	29 667	N
3311113	<b>STEEL INGOTS AND SEMIFINISHED SHAPES AND FORMS @</b>		
	United States .....	<b>4 504 723</b>	<b>3 677 756</b>
	Illinois .....	402 935	287 779
	New York .....	66 924	N
	Ohio .....	1 288 992	802 501
3311115	<b>HOT ROLLED STEEL SHEET AND STRIP, INCLUDING TIN MILL PRODUCTS, TINPLATE, BLACKPLATE, TERNEPLATE, AND TIN-FREE STEEL @</b>		
	United States .....	<b>22 163 062</b>	<b>17 284 088</b>
	Alabama .....	942 007	N
	Illinois .....	1 702 405	1 189 397
	Indiana .....	5 643 207	4 905 424
3311117	<b>HOT ROLLED STEEL BARS AND BAR SHAPES, PLATES, STRUCTURAL SHAPES, AND PILING, INCLUDING CONCRETE REINFORCING AND TOOL STEEL BARS @</b>		
	United States .....	<b>13 465 065</b>	<b>10 032 507</b>
	Illinois .....	1 021 841	804 929
	Indiana .....	1 672 417	1 182 996
	Kentucky .....	271 693	278 342
3311119	<b>STEEL WIRE, INCLUDING GALVANIZED AND OTHER COATED WIRE, MADE IN STEEL MILLS PRODUCING WIRE RODS OR HOT ROLLED BARS #</b>		
	United States .....	<b>454 641</b>	<b>352 075</b>
	Illinois .....	118 310	86 557
	Pennsylvania .....	245 967	N
	331111B	<b>STEEL PIPES AND TUBES, MADE IN STEEL MILLS PRODUCING SEMIFINISHED SHAPES OR PLATE #</b>	
United States .....		<b>2 575 188</b>	<b>1 692 939</b>
Ohio .....		1 010 717	702 148
331111D	<b>COLD ROLLED STEEL SHEET AND STRIP, MADE IN STEEL MILLS PRODUCING HOT ROLLED SHEET OR STRIP #</b>		
	United States .....	<b>8 529 437</b>	<b>6 151 002</b>
	Indiana .....	3 325 509	2 123 110
331111F	<b>COLD FINISHED STEEL BARS AND BAR SHAPES, MADE IN STEEL MILLS PRODUCING HOT ROLLED BARS AND BAR SHAPES #</b>		
	United States .....	<b>977 985</b>	<b>657 669</b>
	Ohio .....	1 205 621	1 270 391
331111H	<b>SEAMLESS ROLLED RING FORGINGS, FERROUS, MADE IN STEEL MILLS</b>		
	United States .....	<b>D</b>	<b>77 316</b>
	Pennsylvania .....	130 216	87 315
331111J	<b>OPEN DIE OR SMITH FORGINGS (HAMMER OR PRESS), FERROUS, MADE IN STEEL MILLS</b>		
	United States .....	<b>D</b>	<b>114 047</b>
	Pennsylvania .....	1 875 636	1 497 742
331111L	<b>OTHER STEEL MILL PRODUCTS, INCLUDING STEEL RAILS, EXCEPT WIRE PRODUCTS @</b>		
	United States .....	<b>587 388</b>	<b>382 762</b>

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331111</b>	<b>IRON &amp; STEEL MILLS</b>				
33120081	Steel rod for wiredrawing .....1,000 s tons..	D	D	N	N
33120067	Steel wire for redrawing.....1,000 s tons..	D	D	N	N
33120075	All other steel shapes and forms (except castings, forgings, and fabricated metal products).....	X	3 601 027	X	N
33111203	Ferromanganese, silicomanganese, and manganese shapes and forms (exc. castings, forgings, and fabricated metal products).....1,000 s tons..	654.7	404 289	N	N
33111205	Ferrochromium shapes and forms (except castings, forgings, and fabricated metal products).....1,000 s tons..	217.5	162 456	N	N
33111207	Ferrosilicon (more than 8 percent silicon) shapes and forms (except castings, forgings, and fabricated metal products).....1,000 s tons..	155.5	120 807	N	N
33111209	Ferrovandium.....1,000 s tons..	5.9	78 248	N	N
33111201	Other ferroalloy shapes and forms (including silvery iron, ferrotungsten, ferromolybdenum, ferronickel, etc.).....1,000 s tons..	222.7	258 808	N	N
331000AE	All other ferrous shapes and forms (except castings, forgings, and fabricated metal products).....1,000 s tons..	P76.1	124 642	N	N
33100039	Aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products).....	X	217 999	X	N
33141933	Nickel (except ferronickel) shapes and forms (except castings, forgings, and fabricated metal products).....1,000 s tons..	37.8	231 389	N	N
33141939	Tin shapes and forms (except castings, forgings, and fabricated metal products).....1,000 s tons..	8.1	45 873	N	N
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products).....1,000 s tons..	P208.1	262 653	N	N
33141913	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products).....	X	181 754	X	N
33151103	Gray iron ingot molds and stools.....	X	29 352	X	N
33151007	All other iron and steel castings.....	X	149 742	X	N
32712400	Clay refractories.....	X	243 958	X	N
32712500	Nonclay refractories.....	X	224 034	X	N
32799207	Limestone fluxes.....	X	381 668	X	N
32741007	Lime fluxes, including quicklime.....	X	311 765	X	N
32741009	Dead-burned dolomite fluxes.....	X	89 844	X	N
32799209	Fluorspar fluxes.....	X	10 120	X	N
32799211	Other fluxes.....	X	132 486	X	N
32700013	All other stone, clay, glass, and concrete products.....	X	14 029	X	N
32500011	Industrial chemicals (except sulfuric acid and oxygen).....	X	87 206	X	N
32512003	Oxygen (including high and low purity) (liquid oxygen should be converted to its gaseous equivalent).....	X	425 858	X	N
32518803	Sulfuric acid (new and spent) (100 percent H2SO4).....	X	13 328	X	N
32500039	All other chemicals and allied products.....	X	31 965	X	N
21221011	Mining crude iron ore and iron ore concentrates, including pelletized and manganiferous (gross weight).....1,000 s tons..	32 342.2	1 351 456	N	N
21221009	Mining iron ore agglomerates, including pelletized and manganiferous (gross weight).....1,000 s tons..	52 003.3	1 893 821	N	N
21229901	Mining manganese ore (including 10 percent manganese) and ferroalloy ore.....	X	23 056	X	N
21220013	All other metal mining.....	X	-	X	N
21211001	Coal used in the production of coke.....1,000 s tons..	28 355.4	1 379 566	N	N
00190023	Iron and steel scrap, excluding home scrap.....1,000 s tons..	48 134.3	6 160 824	N	N
00190053	Direct-reduced iron (DRI).....1,000 s tons..	929.2	116 007	N	N
33120045	Pig iron shapes and forms (except silvery iron, castings, forgings, and fabricated metal products).....1,000 s tons..	2 568.8	692 283	N	N
32410017	Lubricating oils and greases and other petroleum products.....	X	166 040	X	N
33350003	Industrial dies, molds, jigs, and fixtures.....	X	70 584	X	N
33599103	Carbon and graphite electrodes.....	X	916 599	X	N
00970099	All other materials and components, parts, containers, and supplies.....	X	5 229 276	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.....	X	947 654	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.



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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

# Appendix B.

## NAICS Codes, Titles, and Descriptions

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### **331111 IRON AND STEEL MILLS**

This U.S. industry comprises establishments primarily engaged in one or more of the following: (1) direct reduction of iron ore; (2) manufacturing pig iron in molten or solid form; (3) converting pig iron into steel; (4) making steel; (5) making steel and manufacturing shapes (e.g., bar, plate, rod, sheet, strip, wire); and (6) making steel and forming tube and pipe.

The data published with NAICS code 331111 include the following SIC industries:

3312 Blast furnaces and steel mills (pt)  
3399 Primary metal products, n.e.c. (pt)

This definition comes from the 1997 NAICS Manual. However, for this industry, the 1997 Economic Census – Manufacturing did not fully implement the conversion to NAICS. Data for NAICS industry 331111 include establishments primarily engaged in the manufacture of ferrous metal powder, paste, and flake. The NAICS definitions will be fully implemented with the 2002 Economic Census.

#### **3311111 Iron and Steel Mills - Fully Integrated.**

Establishments primarily engaged in smelting iron ore in a blast furnace to produce pig iron in molten or solid form; then converting pig iron into steel by removal of the carbon in the iron through combustion in a basic oxygen

or electric furnace; then producing iron and steel basic shapes, such as plates, sheets, strips, and bars, and other related products, such as pipes, tubes, and wire.

#### **3311112 Iron and Steel Mills - Partially Integrated With a Blast Furnace.**

Establishments primarily engaged in smelting iron ore in a blast furnace to produce pig iron in molten or solid form; then converting pig iron into steel by removal of the carbon in the iron through combustion in a basic oxygen or electric furnace; then producing ingots and/or semifinished shapes, such as blooms, billets, and rods.

#### **3311113 Iron and Steel Mills - Partially Integrated Without a Blast Furnace.**

Establishments primarily engaged in converting pig iron, direct reduced iron, and/or scrap into steel by removal of the carbon in the iron through combustion in a basic oxygen or electric furnace; then producing iron and steel basic shapes, such as plates, sheets, strips, and bars, and other related products, such as pipes, tubes, and wire.

#### **3311114 Iron and Steel Mills - Nonintegrated.**

Establishments primarily engaged in producing iron and steel basic shapes, such as plates, sheets, strips, and bars, and other related products, such as pipes, tubes, and wire from purchased ingots and/or semifinished shapes, such as blooms, billets, and rods.

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

## INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic



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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F.

## Footnotes for Products Statistics and Materials Consumed by Kind

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### Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
\$ 331111101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331111103 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331111105 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331111107 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331111109 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
@3311113 .....	For additional detail, see Current Industrial Report MA331B, Steel Mill Products.
@3311115 .....	For additional detail, see Current Industrial Report MA331B, Steel Mill Products.
@3311117 .....	For additional detail, see Current Industrial Report MA331B, Steel Mill Products.
# 3311119 .....	For additional detail, see Current Industrial Report MA331B, Steel Mill Products, under NAICS product class 3312225.
\$ 3311119100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
# 331111B .....	For additional detail, see Current Industrial Report MA331B, Steel Mill Products, under NAICS product class 3312100.
\$ 331111B100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
# 331111D .....	For additional detail, see Current Industrial Report MA331B, Steel Mill Products, under NAICS product class 3312211.
\$ 331111D100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
# 331111F .....	For additional detail, see Current Industrial Report MA331B, Steel Mill Products, under NAICS product class 3312213.
\$ 331111F100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331111H101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331111H203 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331111J101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331111J203 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
@331111L .....	For additional detail, see Current Industrial Report MA331B, Steel Mill Products.

**Part 2. Materials Consumed by Kind (Table 7)**

Not applicable.

# Appendix G.

## Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33111111	33121 pt	33121 pt	3312223	33152 pt	33152 pt	3313161	33541	33541
3311111101	331215	3312111 pt	3312223101	3315251	3315201 pt	3313161101	3354115	3354115
3311111103	3312116	3312112 pt	3312223103	3315252	3315203 pt	3313161206	3354118	3354118
3311111105	3312153	3312151 pt	3312223105	3315253	3315205 pt	3313161311	3354125	3354125
3311111107	3312173	3312171 pt	3312223107	3315254	3315207 pt	3313161416	3354128	3354128
3311111109 pt	3312196 pt	3312131 pt	3312223109	3315255	3315209 pt	3313161YVW	3354100	3354100
3311111109 pt	3312196 pt	3312197 pt	3312223111 pt	3315214 pt	3315210 pt	3313163	33542	33542
3311111111	3312191	3312191	3312223111 pt	3315214 pt	3315213 pt	3313163101	3354261	3354261
3311111113	3312192	3312192	3312223113	3315256	3315216 pt	3313163106	3354263	3354263
3311111115 pt	3312195 pt	3312193	3312223122	3315257	3315222 pt	3313163YVW	3354200	3354200
3311111115 pt	3312195 pt	3312194	3312223124	3315258	3315223 pt	331316W	33540	33540
3311111117	3312198	3312198	3312223126	3315259	3315225 pt	331316WYVW	3354000	3354000
3311111YVW	3312100 pt	3312100 pt	3312223128	3315260	3315230 pt	331316WYVW	3354002	3354002
3311112	33991 pt	33991 pt	3312223YVW	3315200 pt	3315200 pt	3313191	33551	33551
3311112100 pt	3399100 pt	3399100 pt	3312225	33155	33155	3313191100	3355100	3355100
3311112100 pt	3399155	3399155	3312225100	3315500	3315500	3313193	33552	33552
33111113	33122	33122	3312227	33156	33156	3313193100 pt	3355200 pt	3355200
3311113100	3312200	3312200	3312227101	3315613	3315613	3313193100 pt	3355200 pt	3355222
3311115	33123	33123	3312227110	3315621	3315621	3313193100 pt	3355200 pt	3355225
3311115100	3312300	3312300	3312227112 pt	3315640 pt	3315635	3313197	33571	33571
3311117	33124	33124	3312227112 pt	3315640 pt	3315671	3313197100	3357100	3357100
3311117100	3312400	3312400	3312227YVW	3315600	3315600	3313199	33553	33553
3311119	33125	33125	3312229	33157	33157	3313199100	3355300	3355300
3311119100	3312500	3312500	3312229100	3315700	3315700	331319A	33574 pt	33575 pt
331111B	33126	33126	331222B	33159	33159	331319A100 pt	3357401	3357500 pt
331111B100	3312600	3312600	331222B110	3315951	3315951	331319A100 pt	3357400 pt	3357500 pt
331111D	33127	33127	331222B120	3315955	3315955	331319C	33554	33554
331111D100	3312700	3312700	331222B122	3315963	3315963	331319C100	3355400	3355400
331111F	33128	33128	331222B124	3315971	3315971	331319W pt	33550	33550
331111F100	3312800	3312800	331222B126 pt	3315998 pt	3315942	331319W pt	33570 pt	33570 pt
331111H	3312A	3312A	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3355000	3355000
331111H101	3312A17	3312A17	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3357000 pt	3357000 pt
331111H203	3312A26	3312A26	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3355002	3355002
331111HYVW	3312A00	3312A00	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3357002 pt	3357002 pt
331111J	3312B	3312B	331222BYVW	3315900	3315900	3314110 pt	33310	33310
331111J101	3312B62	3312B62	331222W	33150	33150	3314110 pt	33311	33311
331111J203	3312B66	3312B66	331222WYVW	3315000 pt	3315000 pt	3314110 pt	33312	33312
331111JYVW	3312B00	3312B00	331222WYVW	3315002 pt	3315002 pt	3314110101	3331100	3331100
331111L	3312C	3312C	3313110 pt	28190 pt	28190 pt	3314110106	3331217	3331217
331111L100	3312C00	3312C00	3313110 pt	28195	28195	3314110111	3331230	3331230
331111W pt	33120 pt	33120 pt	3313110100	2819500	2819500	3314110YVW pt	3331000	3331000
331111W pt	33990 pt	33990 pt	3313110YVW	2819000 pt	2819000 pt	3314110YVW pt	3331200	3331200
331111WYVW pt	3312000 pt	3312000 pt	3313110YVW	2819002 pt	2819002 pt	3314110YVW	3331002	3331002
331111WYVW pt	3399000 pt	3399000 pt	3313121	33347	33347	3314191	33391	33391
331111WYVW pt	3312002 pt	3312002 pt	3313121100	3334700	3334700	3314191100	3339100	3339100
331111WYVW pt	3399002 pt	3399002 pt	3313123	33348	33348	3314193	33392	33392
3311121	33132	33132	3313123100	3334800	3334800	3314193101 pt	3339231 pt	3339234
3311121100	3313200	3313200	331312W	33340	33340	3314193101 pt	3339231 pt	3339244
3311123	33133	33133	331312WYVW	3334000	3334000	3314193101 pt	3339231 pt	3339255
3311123100	3313300	3313300	331312WYVW	3334002	3334002	3314193111	3339251	3339251
3311125	33134 pt	33134 pt	3313141	33417	33417	3314193YVW	3339200	3339200
3311125101	3313416	3313415 pt	3313141100	3341700	3341700	3314197	33395	33395
3311125203 pt	3313487 pt	3313408	3313143	33418	33418	3314197101	3339525	3339525
3311125203 pt	3313487 pt	3313489 pt	3313143100	3341800	3341800	3314197206	3339535	3339535
3311125305	3313497	3313498 pt	3313145	33991 pt	33991 pt	3314197311	3339545	3339545
3311125YVW	3313400 pt	3313400 pt	3313145100	3399111	3399111	3314197YVW	3339500	3339500
331112W	33130 pt	33130 pt	331314W pt	33410 pt	33410 pt	3314199	33398	33398
331112WYVW	3313000 pt	3313000 pt	331314W pt	33990 pt	33990 pt	3314199101	3339805	3339805
331112WYVW	3313002 pt	3313002 pt	331314WYVW pt	3341000 pt	3341000 pt	3314199103	3339833	3339833
3312100	33170	33170	331314WYVW pt	3399000 pt	3399000 pt	3314199106 pt	3339851 pt	3339843
3312100100	3317000 pt	3317000 pt	331314WYVW pt	3341002 pt	3341002 pt	3314199106 pt	3339851 pt	3339863
3312100YVW	3317000 pt	3317000 pt	331314WYVW pt	3399002 pt	3399002 pt	3314199121	3339873	3339873
3312100YVW	3317002	3317000 pt	3313151	33531	33531	3314199126 pt	3339889 pt	3339889
3312213	33168	33168	3313151101	3353113	3353113	3314199126 pt	3339889 pt	3339889
3312213100	3316800	3316800	3313151106	3353115	3353115	3314199131	3339899	3339899
331221W	33160	33160	3313151YVW	3353100	3353100	3314199YVW	3339800	3339800
331221WYVW	3316000	3316000	3313153	33532	33532	331419W	33390	33390
331221WYVW	3316002	3316002	3313153101	3353223	3353223	331419WYVW	3339000	3339000
3312221	33151	33151	3313153106	3353225	3353225	331419WYVW	3339002	3339002
3312221110	3315113	3315113	3313153211	3353227	3353227	3314211	33511	33511
3312221112	3315115	3315115	3313153216	3353231	3353231	3314211101	3351111	3351111
3312221214	3315125	3315125	3313153221	3353233	3353233	3314211206	3351131	3351131
3312221222	3315134	3315134	3313153YVW	3353200	3353200	3314211YVW	3351100	3351100
3312221YVW	3315100	3315100	3313155	33533	33533	3314213	33513	33513
3312221110	3315113	3315113	3313155100	3353300	3353300	3314213101	3351311	3351311
3312221112	3315115	3315115	331315W	335300 pt	335300 pt	3314213206	3351332	3351332
3312221214	3315125	3315125	331315WYVW	3353000 pt	3353000 pt	3314213YVW	3351300	3351300
3312221222	3315134	3315134	331315WYVW	3353002 pt	3353002 pt	3314217	33514	33514
3312221YVW	3315100	3315100	331315YVW	3353002 pt	3353002 pt	3314217101	3351413	3351413
						3314217206	3351435	3351435
						3314217YVW	3351400	3351400

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3314219	33515	33515	3314921	33991 pt	33991 pt	331511A	33221	33221
3314219101	3351516	3351516	3314921101	3399166	3399166	331511A100	3322100	3322100
3314219211	3351536	3351536	3314921206	3399177	3399177	331511C	33222	33222
3314219306	3351518	3351518	3314921311	3399186	3399186	331511C300	3322200	3322200
3314219316	3351538	3351538	3314921416 pt	3399189 pt	3399187	331511E	33216	33216
3314219YVW	3351500	3351500	3314921416 pt	3399189 pt	3399188	331511E200	3321600	3321600
331421W	33510	33510	3314921426	3399191	3399191	331511W pt	33210	33210
331421WYWW	3351000	3351000	3314921431	3399198	3399198	331511W pt	33220	33220
331421WYWW	3351002	3351002	3314921YVW	3399100 pt	3399100 pt	331511W pt	33220	33220
3314221	33572	33572	3314923	33413	33413	331511WYWW pt	3321000	3321000
3314221101	3357211	3357211	3314923101	3341311	3341311	331511WYWW pt	3322000	3322000
3314221106	3357251	3357251	3314923206	3341321	3341321	331511WYWW pt	3321002	3321002
3314221211	3357271	3357271	3314923211	3341333	3341333	331511WYWW pt	3322002	3322002
3314221216	3357281	3357281	3314923216	3341351	3341351	3315120	33240	33240
3314221YVW	3357200	3357200	3314923221	3341399	3341399	3315120101	3324063	3324063
3314223	33574 pt	33575 pt	3314923YVW	3341300	3341300	3315120106	3324064	3324064
3314223300 pt	3357402	3357500 pt	3314927	33414	33414	3315120216	3324067	3324067
3314223300 pt	3357400 pt	3357500 pt	3314927101 pt	3341431 pt	3341405	3315120311	3324066	3324066
331422W	33570 pt	33570 pt	3314927101 pt	3341431 pt	3341434	3315120YWW	3324000	3324000
331422WYWW	3357000 pt	3357000 pt	3314927101 pt	3341431 pt	3341444	3315120YWW	3324002	3324002
331422WYWW	3357002 pt	3357002 pt	3314927206	3341411	3341411	3315131	33252	33252
3314230 pt	33410 pt	33410 pt	3314927YVW	3341400	3341400	3315131101	3325211	3325211
3314230 pt	33412	33412	3314929	33415	33415	3315131206	3325215	3325215
3314230 pt	33990 pt	33990 pt	3314929101	3341525	3341525	3315131211	3325219	3325219
3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315131YVW	3325200	3325200
3314230101	3341224	3341224	3314929211	3341545	3341545	3315133	33254	33254
3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133101	3325421	3325421
3314230206	3341226	3341226	331492A pt	33134 pt	33134 pt	3315133106	3325431	3325431
3314230311	3341231	3341231	331492A pt	33416	33416	3315133YVW	3325400	3325400
3314230YVW pt	3341000 pt	3341000 pt	331492A101 pt	3313417	3313415 pt	3315135	33255	33255
3314230YVW pt	3341200	3341200	331492A101 pt	3341633	3341633	3315135101	3325551	3325551
3314230YVW pt	3399000 pt	3399000 pt	331492A106	3341635	3341635	3315135106	3325555	3325555
3314230YVW pt	3399100 pt	3399100 pt	331492A111	3341671	3341671	3315135111	3325559	3325559
3314230YVW pt	3341002 pt	3341002 pt	331492A116	3341697	3341697	3315135YVW	3325500	3325500
3314230YVW pt	3399002 pt	3399002 pt	331492A206	3313488	3313489 pt	331513W	33250	33250
3314911	33561	33561	331492A311	3313499	3313498 pt	331513WYWW	3325000	3325000
3314911101	3356161	3356161	331492AYVW pt	3313400 pt	3313400 pt	331513WYWW	3325002	3325002
3314911106	3356164	3356164	331492AYVW pt	3341600	3341600	3315210	33630	33630
3314911111	3356165	3356165	331492W pt	33130 pt	33130 pt	3315210000	3363000 pt	3363000 pt
3314911116	3356166	3356166	331492W pt	33410 pt	33410 pt	3315210YVW	3363000 pt	3363000 pt
3314911YVW	3356100	3356100	331492WYWW pt	33990 pt	33990 pt	3315220	33640	33640
3314913	33562	33562	331492WYWW pt	3313000 pt	3313000 pt	3315220101	3364011	3364011
3314913101	3356272	3356272	331492WYWW pt	3341000 pt	3341000 pt	3315220206	3364021	3364021
3314913106	3356274	3356274	331492WYWW pt	3399000 pt	3399000 pt	3315220311	3364031	3364031
3314913111	3356279	3356279	331492WYWW pt	3313002 pt	3313002 pt	3315220416	3364041	3364041
3314913YVW	3356200	3356200	331492WYWW pt	3341002 pt	3341002 pt	3315220521	3364051	3364051
3314915	33573	33573	3315111	33211	33211	3315220YVW	3364000	3364000
3314915100	3357300	3357300	3315111106	3321123	3321123	3315220YVW	3364002	3364002
3314917	33574 pt	33575 pt	3315111111	3321125	3321125	3315240	33650	33650
3314917400 pt	3357405	3357500 pt	3315111116	3321126	3321126	3315240101	3365011	3365011
3314917400 pt	3357400 pt	3357500 pt	3315111201	3321121	3321121	3315240206	3365031	3365031
3314919	33563	33563	3315111YVW	3321100	3321100	3315240311	3365051	3365051
3314919101	3356381	3356381	3315113	33212	33212	3315240416	3365073	3365073
3314919106	3356383	3356383	3315113101	3321222	3321222	3315240421	3365061	3365061
3314919111	3356386	3356386	3315113206	3321224	3321224	3315240YVW	3365000	3365000
3314919116	3356391	3356391	3315113211	3321231	3321231	3315240YVW	3365002	3365002
3314919YVW	3356300	3356300	3315113216	3321233	3321233	3315250	33660	33660
331491C	33569	33569	3315113221	3321240	3321240	3315250101	3366020	3366020
331491C101	3356934	3356934	3315113YVW	3321200	3321200	3315250206	3366021	3366021
331491C106	3356951	3356951	3315115	33217	33217	3315250221	3366025	3366025
331491C111	3356957	3356957	331515101	3321731	3321731	3315250411	3366022	3366022
331491C121	3356994	3356994	331515106	3321733	3321733	3315250416	3366024	3366024
331491C126	3356996	3356996	331515111	3321735	3321735	3315250426	3366026	3366026
331491C131	3356997	3356997	331515116	3321736	3321736	3315250531	3366031	3366031
331491C216	3356993	3356993	3315151YVW	3321700	3321700	3315250536	3366041	3366041
331491CYVW	3356900	3356900	3315117	33218	33218	3315250541	3366051	3366051
331491E	33576	33576	3315117101	3321822	3321822	3315250546	3366061	3366061
331491E100	3357600	3357600	3315117106	3321824	3321824	3315250651	3366072	3366072
331491G	33577	33577	3315117111	3321827	3321827	3315250YVW	3366000	3366000
331491G100	3357700	3357700	3315117116	3321830	3321830	3315250YVW	3366002	3366002
331491W pt	33560	33560	3315117121	3321833	3321833	3315280	33690	33690
331491W pt	33570 pt	33570 pt	3315117126	3321836	3321836	3315280116	3369085	3369085
331491WYVW pt	3356000	3356000	3315117YVW	3321800	3321800	3315280201	3369011	3369011
331491WYVW pt	3357000 pt	3357000 pt	3315119	33219	33219	3315280206	3369015	3369015
331491WYVW pt	3356002	3356002	3315119101	3321931	3321931	3315280211	3369023	3369023
331491WYVW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099 pt
331491WYVW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099 pt
331491WYVW pt	3357002 pt	3357002 pt	3315119206	3321939	3321939	3315280YVW	3369000	3369000
331491WYVW pt	3357002 pt	3357002 pt	3315119YVW	3321900	3321900	3315280YVW	3369002	3369002





# Electrometallurgical Ferroalloy Product Manufacturing

# 1997

Issued September 1999

EC97M-3311B

## 1997 Economic Census

*Manufacturing*

Industry Series



**U S C E N S U S B U R E A U**

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## 1997 Economic Census

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Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**

Under Secretary for  
Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.



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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331112</b>	<b>Electrometallurgical ferroalloy product mfg</b> .....	<b>20</b>	<b>23</b>	<b>3 353</b>	<b>140 050</b>	<b>2 406</b>	<b>5 299</b>	<b>92 021</b>	<b>528 338</b>	<b>797 116</b>	<b>1 301 839</b>	<b>59 367</b>
331310	Electrometallurgical products (pt) .....	N	23	3 353	140 050	2 406	5 299	92 021	528 338	797 116	1 301 839	59 367

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331112, ELECTROMETALLURGICAL FERROALLOY PRODUCT MFG</b>												
<b>United States</b> .....	-	<b>23</b>	<b>21</b>	<b>3 353</b>	<b>140 050</b>	<b>2 406</b>	<b>5 299</b>	<b>92 021</b>	<b>528 338</b>	<b>797 116</b>	<b>1 301 839</b>	<b>59 367</b>
Ohio .....	-	5	5	1 538	65 704	1 130	2 576	45 846	257 107	311 139	552 210	29 830

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331112, ELECTROMETALLURGICAL FERROALLOY PRODUCT MFG</b>		<b>331112, ELECTROMETALLURGICAL FERROALLOY PRODUCT MFG—Con.</b>	
Companies <sup>1</sup> .....	number.. 20	Value added .....	\$1,000.. 528 338
All establishments .....	number.. 23	Total inventories, beginning of year .....	\$1,000.. 217 172
Establishments with 1 to 19 employees .....	number.. 2	Finished goods inventories, beginning of year .....	\$1,000.. 83 169
Establishments with 20 to 99 employees .....	number.. 10	Work-in-process inventories, beginning of year .....	\$1,000.. 51 194
Establishments with 100 employees or more .....	number.. 11	Materials and supplies inventories, beginning of year .....	\$1,000.. 82 809
All employees .....	number.. 3 353	Total inventories, end of year .....	\$1,000.. 250 232
Total compensation <sup>2</sup> .....	\$1,000.. 183 458	Finished goods inventories, end of year .....	\$1,000.. 94 705
Annual payroll .....	\$1,000.. 140 050	Work-in-process inventories, end of year .....	\$1,000.. 63 273
Total fringe benefits .....	\$1,000.. 43 408	Materials and supplies inventories, end of year .....	\$1,000.. 92 254
Production workers, average for year .....	number.. 2 406	Gross book value of total assets at beginning of year .....	\$1,000.. 436 949
Production workers on March 12 .....	number.. 2 368	Total capital expenditures (new and used) .....	\$1,000.. 59 367
Production workers on May 12 .....	number.. 2 392	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 10 256
Production workers on August 12 .....	number.. 2 432	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 49 111
Production workers on November 12 .....	number.. 2 432	Total retirements <sup>2</sup> .....	\$1,000.. 10 999
Production-worker hours .....	1,000.. 5 299	Gross book value of total assets at end of year .....	\$1,000.. 485 317
Production-worker wages .....	\$1,000.. 92 021	Total depreciation during year <sup>2</sup> .....	\$1,000.. 28 176
Total cost of materials .....	\$1,000.. 797 116	Total rental payments <sup>2</sup> .....	\$1,000.. 6 456
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 530 040	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 1 705
Cost of resales .....	\$1,000.. D	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 4 751
Cost of fuels .....	\$1,000.. 34 773	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 3 137
Cost of purchased electricity .....	\$1,000.. 99 403	Response coverage ratio <sup>4</sup> .....	percent.. 71
Cost of contract work .....	\$1,000.. D	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 16 663
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 2 566 892	Response coverage ratio <sup>4</sup> .....	percent.. 71
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. D	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 812
Total value of shipments .....	\$1,000.. 1 301 839	Response coverage ratio <sup>4</sup> .....	percent.. 71
Primary products value of shipments .....	\$1,000.. D	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 526
Secondary products value of shipments .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 71
Total miscellaneous receipts .....	\$1,000.. 191 787	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 271
Value of resales .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 71
Contract receipts .....	\$1,000.. 31 756	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 212
Other miscellaneous receipts .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 71
Primary products specialization ratio .....	percent.. D	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 78
Value of primary products shipments made in all industries .....	\$1,000.. 1 075 179	Response coverage ratio <sup>4</sup> .....	percent.. 71
Value of primary products shipments made in this industry .....	\$1,000.. D	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 819
Value of primary products shipments made in other industries .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 71
Coverage ratio .....	percent.. D		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331112. ELECTROMETALLURGICAL FERROALLOY PRODUCT MFG</b>												
<b>All establishments</b> .....	-	<b>23</b>	<b>21</b>	<b>3 353</b>	<b>140 050</b>	<b>2 406</b>	<b>5 299</b>	<b>92 021</b>	<b>528 338</b>	<b>797 116</b>	<b>1 301 839</b>	<b>59 367</b>
Establishments with 1 to 4 employees .....	9	1	-	D	D	D	D	D	D	D	D	D
Establishments with 5 to 9 employees .....	-	1	-	D	D	D	D	D	D	D	D	D
Establishments with 10 to 19 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 20 to 49 employees .....	2	3	3	92	3 178	68	133	2 087	11 611	10 908	22 607	D
Establishments with 50 to 99 employees .....	1	7	7	504	20 320	329	778	12 931	74 294	84 403	158 967	14 520
Establishments with 100 to 249 employees .....	-	8	8	1 231	52 208	874	1 998	31 473	225 510	337 821	554 919	23 337
Establishments with 250 to 499 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees .....	-	2	2	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	2	-	D	D	D	D	D	D	D	D	D

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331112</b>	<b>Electrometallurgical ferrous alloy product mfg ...</b>	<b>23</b>	<b>3 353</b>	<b>140 050</b>	<b>2 406</b>	<b>5 299</b>	<b>92 021</b>	<b>528 338</b>	<b>797 116</b>	<b>1 301 839</b>	<b>59 367</b>
3311121	Ferrosilicon, including briquets, ferrochromium silicon, exothermic chromium additives, and other chromium alloys .....	1	D	D	D	D	D	D	D	D	D
3311123	Ferrosilicon, including briquets, and other silicon alloys .....	5	D	D	D	D	D	D	D	D	D
3311125	Other ferroalloys .....	16	2 435	105 327	1 719	3 710	68 588	347 681	575 683	908 705	32 494

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331112</b>	<b>Electrometallurgical ferroalloy products</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>1 075 179</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3311121	Ferrochromium, including briquets, ferrochromium silicon, exothermic chromium additives, and other chromium alloys	N	X	X	D	N	X	X	D
33111211	Ferrochromium, including briquets, ferrochromium silicon, exothermic chromium additives, and other chromium alloys	N	X	X	D	N	X	X	N
3311121100	Ferrochromium, including briquets, ferrochromium silicon, exothermic chromium additives, and other chromium alloys	2	D	D	D	4	D	D	D
3311123	Ferrosilicon, including briquets, and other silicon alloys	N	X	X	281 614	N	X	X	287 244
33111231	Ferrosilicon, including briquets, and other silicon alloys	N	X	X	281 614	N	X	X	N
3311123100	Ferrosilicon, including briquets, and other silicon alloys	5	P431.1	350.0	281 614	9	336.4	P463.3	287 244
3311125	Other ferroalloys	N	X	X	D	N	X	X	N
33111251	Ferrous superalloys	N	X	X	322 791	N	X	X	N
3311125101	Ferrous superalloys	5	Q32.6	32.6	322 791	N	N	N	N
33111252	Other ferroalloys, including silvery iron, ferromanganese, manganese metal, silicomanganese, and ferrospegeleisen	N	X	X	D	N	X	X	N
3311125203	Other ferroalloys, including silvery iron, ferromanganese, manganese metal, silicomanganese and ferrospegeleisen	5	D	D	D	N	N	N	N
33111253	Other ferrous products made in electric and other furnaces	N	X	X	163 217	N	X	X	N
3311125305	Other ferrous products made in electric and other furnaces	8	8 440.3	197.3	163 217	N	N	N	N
3311125Y	Other ferroalloys, nsk	N	X	X	17 875	N	X	X	N
3311125YWW	Other ferroalloys, nsk	N	X	X	17 875	N	X	X	N
331112W	Electrometallurgical ferroalloy products, total	N	X	X	-	N	X	X	N
331112WY	Electrometallurgical ferroalloy products, nsk, total	N	X	X	-	N	X	X	N
331112WYWW	Electrometallurgical ferroalloy products, nsk, for nonadministrative-record establishments	N	X	X	-	N	X	X	N
331112WYWY	Electrometallurgical ferroalloy products, nsk, for administrative-record establishments	N	X	X	-	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3311121</b>	<b>FERROCHROMIUM, INCLUDING BRIQUETS, FERROCHROMIUM SILICON, EXOTHERMIC CHROMIUM ADDITIVES, AND OTHER CHROMIUM ALLOYS</b>		
	United States	D	D
<b>3311123</b>	<b>FERROSILICON, INCLUDING BRIQUETS, AND OTHER SILICON ALLOYS</b>		
	United States	281 614	287 244
<b>3311125</b>	<b>OTHER FERROALLOYS</b>		
	United States	D	N
	Ohio	337 853	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331112</b>	<b>ELECTROMETALLURGICAL FERROALLOY PRODUCT MFG</b>				
33120075	All other steel shapes and forms (except castings, forgings, and fabricated metal products).....	X	D	X	N
33111203	Ferromanganese, silicomanganese, and manganese shapes and forms (exc. castings, forgings, and fabricated metal products).....1,000 s tons..	D	D	N	N
33111205	Ferrochromium shapes and forms (except castings, forgings, and fabricated metal products).....1,000 s tons..	D	D	N	N
33111207	Ferrosilicon (more than 8 percent silicon) shapes and forms (except castings, forgings, and fabricated metal products).....1,000 s tons..	7.3	4 050	N	N
33111209	Ferrovanadium.....1,000 s tons..	D	D	N	N
33111201	Other ferroalloy shapes and forms (including silvery iron, ferrotungsten, ferromolybdenum, ferronickel, etc.).....1,000 s tons..	D	D	N	N
331000AE	All other ferrous shapes and forms (except castings, forgings, and fabricated metal products).....1,000 s tons..	-	-	N	N
33100039	Aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products).....	X	10 619	X	N
33141933	Nickel (except ferronickel) shapes and forms (except castings, forgings, and fabricated metal products).....1,000 s tons..	1.7	11 442	N	N
33141913	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products).....	X	92 785	X	N
33151103	Gray iron ingot molds and stools.....	X	84	X	N
33151007	All other iron and steel castings.....	X	1 557	X	N
32712400	Clay refractories.....	X	1 316	X	N
32712500	Nonclay refractories.....	X	11 517	X	N
32799207	Limestone fluxes.....	X	D	X	N
32741007	Lime fluxes, including quicklime.....	X	D	X	N
32741009	Dead-burned dolomite fluxes.....	X	D	X	N
32799209	Fluorspar fluxes.....	X	D	X	N
32799211	Other fluxes.....	X	D	X	N
32700013	All other stone, clay, glass, and concrete products.....	X	6 196	X	N
32500011	Industrial chemicals (except sulfuric acid and oxygen).....	X	4 563	X	N
32512003	Oxygen (including high and low purity) (liquid oxygen should be converted to its gaseous equivalent).....	X	1 134	X	N
32518803	Sulfuric acid (new and spent) (100 percent H2SO4).....	X	D	X	N
32500039	All other chemicals and allied products.....	X	1 593	X	N
21221011	Mining crude iron ore and iron ore concentrates, including pelletized and manganiferous (gross weight).....1,000 s tons..	-	-	N	N
21229901	Mining manganese ore (including 10 percent manganese) and ferroalloy ore.....	X	D	X	N
21220013	All other metal mining.....	X	-	X	N
21211001	Coal used in the production of coke.....1,000 s tons..	D	D	N	N
00190023	Iron and steel scrap, excluding home scrap.....1,000 s tons..	S	43 118	N	N
33120045	Pig iron shapes and forms (except silvery iron, castings, forgings, and fabricated metal products).....1,000 s tons..	D	D	N	N
32410017	Lubricating oils and greases and other petroleum products.....	X	890	X	N
33350003	Industrial dies, molds, jigs, and fixtures.....	X	249	X	N
33599103	Carbon and graphite electrodes.....	X	18 554	X	N
00970099	All other materials and components, parts, containers, and supplies.....	X	218 736	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.....	X	20 318	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.



# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331112 ELECTROMETALLURGICAL FERROALLOY PRODUCT MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing electrometallurgical ferroalloys. Ferroalloys add critical elements, such as silicon and manganese for carbon steel and chromium, vanadium, tungsten, titanium, and molybdenum for low- and high-alloy

metals. Ferroalloys include iron-rich alloys and more pure forms of elements added during the steel manufacturing process that alter or improve the characteristics of the metal being made.

The data published with NAICS code 331112 include the following SIC industry:

3313 Electrometallurgical products (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.



In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.









# Iron and Steel Pipes and Tubes Manufacturing From Purchased Steel

# 1997

Issued September 1999

EC97M-3312A

## 1997 Economic Census

*Manufacturing*

Industry Series



**U S C E N S U S B U R E A U**

*Helping You Make Informed Decisions*

U.S. Department of Commerce  
Economics and Statistics Administration  
U.S. CENSUS BUREAU



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# Iron and Steel Pipes and Tubes Manufacturing From Purchased Steel

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.



# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econgguide](http://www.census.gov/econgguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331210</b>	<b>Iron &amp; steel pipes &amp; tubes mfg from purchased steel</b>	<b>169</b>	<b>235</b>	<b>27 723</b>	<b>1 005 700</b>	<b>21 707</b>	<b>45 760</b>	<b>679 087</b>	<b>2 902 076</b>	<b>4 697 173</b>	<b>7 565 377</b>	<b>227 250</b>
331700	Steel pipe & tubes	N	235	27 723	1 005 700	21 707	45 760	679 087	2 902 076	4 697 173	7 565 377	227 250

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331210, IRON &amp; STEEL PIPES &amp; TUBES MFG FROM PURCHASED STEEL</b>												
<b>United States</b>	-	<b>235</b>	<b>188</b>	<b>27 723</b>	<b>1 005 700</b>	<b>21 707</b>	<b>45 760</b>	<b>679 087</b>	<b>2 902 076</b>	<b>4 697 173</b>	<b>7 565 377</b>	<b>227 250</b>
Alabama	-	6	4	410	15 929	320	692	9 469	45 938	101 679	146 744	5 778
California	-	19	11	1 255	54 060	930	1 959	32 742	117 602	319 784	432 244	18 719
Illinois	-	22	20	2 579	128 558	1 852	4 144	69 914	421 826	710 296	1 154 701	25 843
Indiana	-	17	14	1 731	51 239	1 375	2 873	37 884	145 155	267 113	413 226	14 375
Kentucky	-	5	4	370	11 336	305	602	8 972	27 742	55 974	84 609	2 661
Michigan	-	13	13	1 690	54 833	1 331	2 663	37 378	117 202	195 774	311 303	5 983
Minnesota	-	5	3	535	24 742	435	950	14 078	58 613	34 081	91 693	1 743
New Jersey	2	7	5	409	17 330	288	532	8 779	37 528	53 459	89 244	3 603
Ohio	-	26	22	5 122	176 940	4 251	8 989	133 112	520 919	705 913	1 216 321	35 947
Oklahoma	1	6	6	902	27 485	736	1 773	21 426	68 308	113 773	184 241	15 067
Pennsylvania	-	20	20	3 493	136 314	2 846	5 978	100 123	494 841	757 366	1 242 778	22 738
Tennessee	-	9	7	1 197	34 431	958	1 619	23 480	121 173	178 735	297 111	8 547
Texas	1	13	11	1 266	48 181	967	2 312	34 018	127 217	228 438	354 134	11 598
West Virginia	-	5	2	129	3 674	93	172	2 918	7 519	23 381	31 805	355

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331210, IRON &amp; STEEL PIPES &amp; TUBES MFG FROM PURCHASED STEEL</b>		<b>331210, IRON &amp; STEEL PIPES &amp; TUBES MFG FROM PURCHASED STEEL—Con.</b>	
Companies <sup>1</sup> .....	number.. 169	Value added .....	\$1,000.. 2 902 076
All establishments .....	number.. 235	Total inventories, beginning of year .....	\$1,000.. 1 169 158
Establishments with 1 to 19 employees .....	number.. 47	Finished goods inventories, beginning of year .....	\$1,000.. 435 851
Establishments with 20 to 99 employees .....	number.. 98	Work-in-process inventories, beginning of year .....	\$1,000.. 229 876
Establishments with 100 employees or more .....	number.. 90	Materials and supplies inventories, beginning of year .....	\$1,000.. 503 431
All employees .....	number.. 27 723	Total inventories, end of year .....	\$1,000.. 1 220 786
Total compensation <sup>2</sup> .....	\$1,000.. 1 277 820	Finished goods inventories, end of year .....	\$1,000.. 446 526
Annual payroll .....	\$1,000.. 1 005 700	Work-in-process inventories, end of year .....	\$1,000.. 253 073
Total fringe benefits .....	\$1,000.. 272 120	Materials and supplies inventories, end of year .....	\$1,000.. 521 187
Production workers, average for year .....	number.. 21 707	Gross book value of total assets at beginning of year .....	\$1,000.. 2 339 927
Production workers on March 12 .....	number.. 21 699	Total capital expenditures (new and used) .....	\$1,000.. 227 250
Production workers on May 12 .....	number.. 21 734	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 32 575
Production workers on August 12 .....	number.. 21 480	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 194 675
Production workers on November 12 .....	number.. 21 915	Total retirements <sup>2</sup> .....	\$1,000.. 63 480
Production-worker hours .....	1,000.. 45 760	Gross book value of total assets at end of year .....	\$1,000.. 2 503 697
Production-worker wages .....	\$1,000.. 679 087	Total depreciation during year <sup>2</sup> .....	\$1,000.. 135 199
Total cost of materials .....	\$1,000.. 4 697 173	Total rental payments <sup>2</sup> .....	\$1,000.. 40 328
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 4 347 099	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 19 921
Cost of resales .....	\$1,000.. 146 468	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 20 407
Cost of fuels .....	\$1,000.. 42 642	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 10 490
Cost of purchased electricity .....	\$1,000.. 88 036	Response coverage ratio <sup>4</sup> .....	percent.. 84
Cost of contract work .....	\$1,000.. 72 928	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 77 371
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 1 433 532	Response coverage ratio <sup>4</sup> .....	percent.. 84
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 6 180
Total value of shipments .....	\$1,000.. 7 565 377	Response coverage ratio <sup>4</sup> .....	percent.. 84
Primary products value of shipments .....	\$1,000.. 7 077 146	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 4 853
Secondary products value of shipments .....	\$1,000.. 281 035	Response coverage ratio <sup>4</sup> .....	percent.. 84
Total miscellaneous receipts .....	\$1,000.. 207 196	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 2 445
Value of resales .....	\$1,000.. 161 202	Response coverage ratio <sup>4</sup> .....	percent.. 84
Contract receipts .....	\$1,000.. 5 874	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 1 990
Other miscellaneous receipts .....	\$1,000.. 40 120	Response coverage ratio <sup>4</sup> .....	percent.. 84
Primary products specialization ratio .....	percent.. 96	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 5 621
Value of primary products shipments made in all industries .....	\$1,000.. 7 589 151	Response coverage ratio <sup>4</sup> .....	percent.. 84
Value of primary products shipments made in this industry .....	\$1,000.. 7 077 146	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 7 965
Value of primary products shipments made in other industries .....	\$1,000.. 512 005	Response coverage ratio <sup>4</sup> .....	percent.. 84
Coverage ratio .....	percent.. 93		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.



**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331210, IRON &amp; STEEL PIPES &amp; TUBES MFG FROM PURCHASED STEEL</b>												
<b>All establishments</b> .....	-	235	188	27 723	1 005 700	21 707	45 760	679 087	2 902 076	4 697 173	7 565 377	227 250
Establishments with 1 to 4 employees .....	2	16	-	41	1 320	31	46	764	4 137	8 632	12 311	105
Establishments with 5 to 9 employees .....	-	11	-	85	2 457	65	105	1 601	7 262	14 089	21 243	252
Establishments with 10 to 19 employees .....	-	20	-	304	9 583	227	440	5 867	22 094	52 102	75 904	1 985
Establishments with 20 to 49 employees .....	1	44	44	1 510	48 026	1 191	2 377	32 912	131 837	245 091	381 996	16 620
Establishments with 50 to 99 employees .....	-	54	54	3 912	139 591	3 136	6 534	97 078	433 070	887 846	1 306 505	35 422
Establishments with 100 to 249 employees .....	-	57	57	9 058	338 442	6 809	14 023	225 581	886 874	1 668 998	2 528 286	77 046
Establishments with 250 to 499 employees .....	-	28	28	9 816	330 386	7 753	16 461	230 098	852 362	1 197 536	2 027 113	84 571
Establishments with 500 to 999 employees .....	-	5	5	2 997	135 895	2 495	5 774	85 186	564 440	622 879	1 212 019	11 249
Establishments with 1,000 to 2,499 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	-	-	-	-	-	-	-	-	-	-	-	-

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331210</b>	<b>Iron &amp; steel pipes &amp; tubes mfg from purchased steel</b> .....	235	27 723	1 005 700	21 707	45 760	679 087	2 902 076	4 697 173	7 565 377	227 250

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331210</b>	<b>Iron and steel pipes and tubes</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>7 589 151</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>4 879 704</b>
3312100	Iron and steel pipes and tubes @ .....	N	X	X	7 589 151	N	X	X	4 879 704
33121001	Steel pipes and tubes, made in steel mills not producing semifinished shapes or plate .....	N	X	X	7 586 950	N	X	X	N
3312100100	Steel pipes and tubes, made in steel mills not producing semifinished shapes or plate \$ .....	177	X	X	7 586 950	N	X	X	N
3312100Y	Iron and steel pipes and tubes, nsk, total .....	N	X	X	2 201	N	X	X	N
3312100YWW	Iron and steel pipes and tubes, nsk, for nonadministrative-record establishments .....	N	X	X	2 201	N	X	X	N
3312100YWY	Iron and steel pipes and tubes, nsk, for administrative-record establishments .....	N	X	X	-	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331210</b>	<b>IRON &amp; STEEL PIPES &amp; TUBES MFG FROM PURCHASED STEEL</b>				
33120075	All other steel shapes and forms (except castings, forgings, and fabricated metal products) .....	X	3 146 395	X	2 126 410
33111203	Ferromanganese, silicomanganese, and manganese shapes and forms (exc. castings, forgings, and fabricated metal products) .....	-	-	D	D
33111205	Ferrochromium shapes and forms (except castings, forgings, and fabricated metal products) .....	-	-	D	D
33111207	Ferrosilicon (more than 8 percent silicon) shapes and forms (except castings, forgings, and fabricated metal products) .....	-	-	D	D
331000AE	All other ferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	D	D	S	41 877
33100039	Aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	226	X	D
33141933	Nickel (except ferronickel) shapes and forms (except castings, forgings, and fabricated metal products) .....	D	D	D	D
33141939	Tin shapes and forms (except castings, forgings, and fabricated metal products) .....	-	-	D	D
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	16.5	20 247	D	D
33141913	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	97 963	X	32 245
33151103	Gray iron ingot molds and stools .....	X	-	X	D
33151007	All other iron and steel castings .....	X	-	X	D
32712400	Clay refractories .....	X	-	X	D
32712500	Nonclay refractories .....	X	-	X	D
32741007	Lime fluxes, including quicklime .....	X	34	X	D
32799211	Other fluxes .....	X	1 294	X	Z
32700013	All other stone, clay, glass, and concrete products .....	X	-	X	D
32500011	Industrial chemicals (except sulfuric acid and oxygen) .....	X	11 006	X	5 604
32512003	Oxygen (including high and low purity) (liquid oxygen should be converted to its gaseous equivalent) .....	X	887	X	92
32518803	Sulfuric acid (new and spent) (100 percent H2SO4) .....	X	502	X	931
32500039	All other chemicals and allied products .....	X	275	X	D
21221011	Mining crude iron ore and iron ore concentrates, including pelletized and manganese (gross weight) .....	-	-	D	D
00190023	Iron and steel scrap, excluding home scrap .....	-	-	D	D
33120045	Pig iron shapes and forms (except silvery iron, castings, forgings, and fabricated metal products) .....	-	-	D	D
32410017	Lubricating oils and greases and other petroleum products .....	X	15 968	X	5 076

See footnotes at end of table.

**Table 7. Materials Consumed by Kind: 1997 and 1992—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331210</b>	<b>IRON &amp; STEEL PIPES &amp; TUBES MFG FROM PURCHASED STEEL—Con.</b>				
33350003	Industrial dies, molds, jigs, and fixtures .....	X	10 427	X	6 122
33599103	Carbon and graphite electrodes, .....	X	—	X	D
00970099	All other materials and components, parts, containers, and supplies .....	X	553 885	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	446 069	X	483 783

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: <sup>p</sup> 10 to 19 percent estimated; <sup>q</sup> 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

**PRIMARY PRODUCT CLASS CODE**

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

**PRODUCTION-WORKER HOURS**

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

**QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER**

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

**RENTAL PAYMENTS**

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.



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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331210 IRON AND STEEL PIPES AND TUBES MANUFACTURING FROM PURCHASED STEEL**

This U.S. industry comprises establishments primarily engaged in manufacturing welded, riveted, or seamless pipe and tube from purchased iron or steel.

The data published with NAICS code 331210 include the following SIC industry:

3317 Steel pipe and tubes

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.



# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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## Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
@3312100 .....	For additional detail, see Current Industrial Report MA331B, Steel Mill Products.
\$ 3312100100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

## Part 2. Materials Consumed by Kind (Table 7)

Not applicable.







# Cold-Rolled Steel Shape Manufacturing

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



# U S C E N S U S B U R E A U

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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the



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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331221</b>	<b>Cold-rolled steel shape mfg . . .</b>	<b>154</b>	<b>187</b>	<b>14 348</b>	<b>638 723</b>	<b>10 419</b>	<b>21 687</b>	<b>440 150</b>	<b>2 059 431</b>	<b>4 297 811</b>	<b>6 336 807</b>	<b>139 908</b>
331600	Cold finishing of steel shapes . .	N	187	14 348	638 723	10 419	21 687	440 150	2 059 431	4 297 811	6 336 807	139 908

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331221, COLD-ROLLED STEEL SHAPE MFG</b>												
United States . . . . .	-	<b>187</b>	<b>91</b>	<b>14 348</b>	<b>638 723</b>	<b>10 419</b>	<b>21 687</b>	<b>440 150</b>	<b>2 059 431</b>	<b>4 297 811</b>	<b>6 336 807</b>	<b>139 908</b>
Connecticut . . . . .	-	12	6	1 014	47 959	780	1 620	33 672	153 360	189 323	337 342	2 980
Illinois . . . . .	-	15	8	1 503	68 511	1 127	2 466	50 049	332 067	659 405	983 257	10 315
Indiana . . . . .	-	6	4	677	33 591	554	1 252	26 538	74 203	207 208	279 298	1 209
Massachusetts . . . . .	3	5	4	495	22 163	310	616	12 603	77 994	82 271	156 447	1 816
Michigan . . . . .	-	17	7	789	35 522	579	1 253	26 596	115 606	349 094	465 416	9 763
Missouri . . . . .	-	5	2	247	7 938	130	307	3 400	17 829	63 735	82 414	1 654
New York . . . . .	-	3	3	776	37 967	514	1 052	20 265	85 123	180 881	265 501	7 569
Ohio . . . . .	-	29	17	3 607	170 137	2 651	5 483	112 111	494 456	894 228	1 387 419	50 218
Pennsylvania . . . . .	-	21	17	2 696	102 929	1 932	3 888	75 577	238 827	662 343	904 016	19 767

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331221, COLD-ROLLED STEEL SHAPE MFG</b>		<b>331221, COLD-ROLLED STEEL SHAPE MFG—Con.</b>	
Companies <sup>1</sup> .....	number.. 154	Value added .....	..\$1,000.. 2 059 431
All establishments .....	number.. 187	Total inventories, beginning of year .....	..\$1,000.. 1 177 413
Establishments with 1 to 19 employees .....	number.. 96	Finished goods inventories, beginning of year .....	..\$1,000.. 307 686
Establishments with 20 to 99 employees .....	number.. 50	Work-in-process inventories, beginning of year .....	..\$1,000.. 494 884
Establishments with 100 employees or more .....	number.. 41	Materials and supplies inventories, beginning of year .....	..\$1,000.. 374 843
All employees .....	number.. 14 348	Total inventories, end of year .....	..\$1,000.. 1 189 613
Total compensation <sup>2</sup> .....	..\$1,000.. 873 233	Finished goods inventories, end of year .....	..\$1,000.. 334 772
Annual payroll .....	..\$1,000.. 638 723	Work-in-process inventories, end of year .....	..\$1,000.. 488 233
Total fringe benefits .....	..\$1,000.. 234 510	Materials and supplies inventories, end of year .....	..\$1,000.. 366 608
Production workers, average for year .....	number.. 10 419	Gross book value of total assets at beginning of year .....	..\$1,000.. 2 587 687
Production workers on March 12 .....	number.. 10 296	Total capital expenditures (new and used) .....	..\$1,000.. 139 908
Production workers on May 12 .....	number.. 10 376	Capital expenditures for buildings and other structures (new and used) .....	..\$1,000.. 14 684
Production workers on August 12 .....	number.. 10 432	Capital expenditures for machinery and equipment (new and used) .....	..\$1,000.. 125 224
Production workers on November 12 .....	number.. 10 572	Total retirements <sup>2</sup> .....	..\$1,000.. 32 877
Production-worker hours .....	..1,000.. 21 687	Gross book value of total assets at end of year .....	..\$1,000.. 2 694 718
Production-worker wages .....	..\$1,000.. 440 150	Total depreciation during year <sup>2</sup> .....	..\$1,000.. 148 275
Total cost of materials .....	..\$1,000.. 4 297 811	Total rental payments <sup>2</sup> .....	..\$1,000.. 12 899
Cost of materials, parts, containers, etc., consumed .....	..\$1,000.. 4 017 087	Buildings and other structures rental payments <sup>2</sup> .....	..\$1,000.. 4 205
Cost of resales .....	..\$1,000.. 32 247	Machinery and equipment rental payments <sup>2</sup> .....	..\$1,000.. 8 694
Cost of fuels .....	..\$1,000.. 49 965	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	..\$1,000.. 7 935
Cost of purchased electricity .....	..\$1,000.. 82 802	Response coverage ratio <sup>4</sup> .....	percent.. 86
Cost of contract work .....	..\$1,000.. 115 710	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	..\$1,000.. 56 859
Quantity of electricity purchased for heat and power .....	..1,000 kWh.. 1 620 845	Response coverage ratio <sup>4</sup> .....	percent.. 86
Quantity of electricity generated less sold for heat and power .....	..1,000 kWh.. -	Cost of purchased communications services <sup>3</sup> .....	..\$1,000.. 4 667
Total value of shipments .....	..\$1,000.. 6 336 807	Response coverage ratio <sup>4</sup> .....	percent.. 86
Primary products value of shipments .....	..\$1,000.. 5 188 318	Cost of purchased legal services <sup>3</sup> .....	..\$1,000.. 2 274
Secondary products value of shipments .....	..\$1,000.. 1 040 688	Response coverage ratio <sup>4</sup> .....	percent.. 86
Total miscellaneous receipts .....	..\$1,000.. 107 801	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	..\$1,000.. 1 705
Value of resales .....	..\$1,000.. 39 073	Response coverage ratio <sup>4</sup> .....	percent.. 86
Contract receipts .....	..\$1,000.. 17 636	Cost of purchased advertising services <sup>3</sup> .....	..\$1,000.. 1 364
Other miscellaneous receipts .....	..\$1,000.. 51 092	Response coverage ratio <sup>4</sup> .....	percent.. 86
Primary products specialization ratio .....	percent.. 83	Cost of purchased software and other data processing services <sup>3</sup> .....	..\$1,000.. 8 538
Value of primary products shipments made in all industries .....	..\$1,000.. 5 709 022	Response coverage ratio <sup>4</sup> .....	percent.. 86
Value of primary products shipments made in this industry .....	..\$1,000.. 5 188 318	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	..\$1,000.. 9 275
Value of primary products shipments made in other industries .....	..\$1,000.. 520 704	Response coverage ratio <sup>4</sup> .....	percent.. 86
Coverage ratio .....	percent.. 90		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331221, COLD-ROLLED STEEL SHAPE MFG</b>												
<b>All establishments .....</b>	-	<b>187</b>	<b>91</b>	<b>14 348</b>	<b>638 723</b>	<b>10 419</b>	<b>21 687</b>	<b>440 150</b>	<b>2 059 431</b>	<b>4 297 811</b>	<b>6 336 807</b>	<b>139 908</b>
Establishments with 1 to 4 employees .....	8	45	-	88	2 808	71	110	1 951	10 601	17 072	27 813	634
Establishments with 5 to 9 employees .....	7	31	-	213	6 168	157	233	4 381	22 180	42 568	64 679	1 371
Establishments with 10 to 19 employees .....	4	20	-	224	6 893	165	286	4 782	33 077	67 639	119 878	2 195
Establishments with 20 to 49 employees .....	1	25	25	745	27 025	550	991	17 058	96 598	246 639	346 016	11 028
Establishments with 50 to 99 employees .....	1	25	25	1 689	64 853	1 298	2 765	44 198	172 763	411 040	572 790	9 838
Establishments with 100 to 249 employees .....	-	25	25	3 866	167 125	2 748	5 730	108 501	425 197	925 803	1 333 236	40 988
Establishments with 250 to 499 employees .....	-	11	11	3 492	167 619	2 503	5 355	111 209	544 131	926 842	1 467 392	19 549
Establishments with 500 to 999 employees .....	-	4	4	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	87	-	528	14 282	404	542	10 223	41 267	87 648	129 837	3 245

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331221</b>	<b>Cold-rolled steel shape mfg .....</b>	<b>187</b>	<b>14 348</b>	<b>638 723</b>	<b>10 419</b>	<b>21 687</b>	<b>440 150</b>	<b>2 059 431</b>	<b>4 297 811</b>	<b>6 336 807</b>	<b>139 908</b>
3312211	Cold rolled steel sheet and strip, made in steel mills not producing hot rolled sheet or strip .....	45	9 656	456 137	6 849	14 379	314 693	1 600 605	3 053 812	4 618 691	103 248
3312213	Cold finished steel bars and bar shapes, made in steel mills not producing hot rolled bars and bar shapes .....	47	3 889	159 949	2 932	6 272	109 036	398 049	1 139 616	1 551 861	31 652

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331221</b>	<b>Cold finishing of steel shapes .....</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>5 709 022</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>4 564 843</b>
3312211	Cold rolled steel sheet and strip, made in steel mills not producing hot rolled sheet or strip @ .....	N	X	X	4 086 021	N	X	X	3 311 387
33122111	Cold rolled steel sheet and strip, made in steel mills not producing hot rolled sheet or strip .....	N	X	X	4 086 021	N	X	X	N
3312211100	Cold rolled steel sheet and strip, made in steel mills not producing hot rolled sheet or strip \$ .....	35	X	X	4 086 021	61	X	X	3 311 387
3312213	Cold finished steel bars and bar shapes, made in steel mills not producing hot rolled bars and bar shapes @ .....	N	X	X	1 482 350	N	X	X	1 176 248
33122131	Cold finished steel bars and bar shapes, made in steel mills not producing hot rolled bars and bar shapes .....	N	X	X	1 482 350	N	X	X	N
3312213100	Cold finished steel bars and bar shapes, made in steel mills not producing hot rolled bars and bar shapes \$ .....	42	X	X	1 482 350	53	X	X	1 176 248
331221W	Cold finishing of steel shapes, nsk, total .....	N	X	X	140 651	N	X	X	77 208
331221WY	Cold finishing of steel shapes, nsk, total .....	N	X	X	140 651	N	X	X	N
331221WYWW	Cold finishing of steel shapes, nsk, for nonadministrative-record establishments .....	N	X	X	12 996	N	X	X	60 270
331221WYWY	Cold finishing of steel shapes, nsk, for administrative-record establishments .....	N	X	X	127 655	N	X	X	16 938

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3312211</b>	<b>COLD ROLLED STEEL SHEET AND STRIP, MADE IN STEEL MILLS NOT PRODUCING HOT ROLLED SHEET OR STRIP @</b>		
	<b>United States .....</b>	<b>4 086 021</b>	<b>3 311 387</b>
	California .....	768 717	N
	Connecticut .....	345 968	287 778
	Ohio .....	963 201	705 947
	Pennsylvania .....	594 796	742 474
<b>3312213</b>	<b>COLD FINISHED STEEL BARS AND BAR SHAPES, MADE IN STEEL MILLS NOT PRODUCING HOT ROLLED BARS AND BAR SHAPES @</b>		
	<b>United States .....</b>	<b>1 482 350</b>	<b>1 176 248</b>
	Illinois .....	213 902	191 365
	Michigan .....	162 638	99 836
	Ohio .....	233 107	257 500
	Pennsylvania .....	186 275	92 561
	Wisconsin .....	122 191	88 423

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331221</b>	<b>COLD-ROLLED STEEL SHAPE MFG</b>				
33120081	Steel rod for wiredrawing .....1,000 s tons..	156.8	89 015	P164.1	76 789
33120067	Steel wire for redrawing.....1,000 s tons..	S	168 133	D	D
33120075	All other steel shapes and forms (except castings, forgings, and fabricated metal products) .....	X	2 528 252	X	2 415 777
33111201	Other ferroalloy shapes and forms (including silvery iron, ferrotungsten, ferromolybdenum, ferronickel, etc.).....1,000 s tons..	D	D	D	D
331000AE	All other ferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	-	-	D	D
33100039	Aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	D
33141933	Nickel (except ferronickel) shapes and forms (except castings, forgings, and fabricated metal products) .....	D	D	D	D
33141939	Tin shapes and forms (except castings, forgings, and fabricated metal products) .....	D	D	D	D
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	D	D	D	D
33141913	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	D
33151007	All other iron and steel castings .....	X	D	X	3 492
32712400	Clay refractories .....	X	D	X	D
32741007	Lime fluxes, including quicklime .....	X	D	X	D
32500011	Industrial chemicals (except sulfuric acid and oxygen) .....	X	12 322	X	10 534
32512003	Oxygen (including high and low purity) (liquid oxygen should be converted to its gaseous equivalent) .....	X	D	X	D
32518803	Sulfuric acid (new and spent) (100 percent H2SO4) .....	X	2 063	X	184
32500039	All other chemicals and allied products .....	X	3 132	X	1 667
00190023	Iron and steel scrap, excluding home scrap .....	-	-	D	D
32410017	Lubricating oils and greases and other petroleum products .....	X	10 307	X	11 802
33350003	Industrial dies, molds, jigs, and fixtures .....	X	1 081	X	1 219
00970099	All other materials and components, parts, containers, and supplies .....	X	905 394	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	225 938	X	83 208

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It



includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331221 ROLLED STEEL SHAPE MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in rolling or drawing shapes (except wire), such as plate, sheet, strip, rod, and bar, from purchased steel.

The data published with NAICS code 331221 include the following SIC industry:

3316 Cold finishing of steel shapes

This definition comes from the 1997 NAICS Manual. However, for this industry, the 1997 Economic Census –

Manufacturing did not fully implement the conversion to NAICS. Data for NAICS industry 331221 do not include establishments primarily engaged in making coke oven and blast furnace products; in making steel and rolling or drawing steel shapes; or in the making of ferrous metal powder, paste, and flake. The NAICS definitions will be fully implemented with the 2002 Economic Census.

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.



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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F.

## Footnotes for Products Statistics and Materials Consumed by Kind

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### Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
@3312211 .....	For additional detail, see Current Industrial Report MA331B, Steel Mill Products.
\$ 3312211100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
@3312213 .....	For additional detail, see Current Industrial Report MA331B, Steel Mill Products.
\$ 3312213100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

### Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

# Appendix G.

## Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published			1997 collected			1992 published			1997 published			1997 collected			1992 published																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
33111111	33121 pt	33121 pt	3312223	33152 pt	33152 pt	3313161	33541	33541	3312223	33152 pt	33152 pt	3313161101	3354115	3354115	3312223101	3315251	3315201 pt	3313161206	3354118	3354118	3312223103	3315252	3315203 pt	3313161311	3354125	3354125	3312223105	3315253	3315205 pt	3313161416	3354128	3354128	3312223107	3315254	3315207 pt	3313161YVW	3354100	3354100	3312223109	3315255	3315209 pt				3313163	33542	33542	3312223111	3315214 pt	3315210 pt	3313163101	3354261	3354261	3312223113	3315256	3315216 pt	3313163106	3354263	3354263	3312223116	3315257	3315222 pt	3313163YVW	3354200	3354200	3312223122	3315258	3315223 pt				331316W	33540	33540	3312223124	3315259	3315225 pt	331316WYVW	3354000	3354000	3312223126	3315260	3315230 pt	331316WYVW	3354002	3354002	3312223128	3315261	3315230 pt				3313191	33551	33551	3312223YVW	3315200 pt	3315200 pt	3312225	33155	33155	3313191100	3355100	3355100				3312227	33156	33156	3313193	33552	33552	3312227101	3315613	3315613	3313193100 pt	3355200 pt	3355200	3312227103	3315621	3315621	3313193100 pt	3355200 pt	3355222	3312227112 pt	3315640 pt	3315635	3313193100 pt	3355200 pt	3355225	3312227112 pt	3315640 pt	3315671				3313197	33571	33571	3312227YVW	3315600	3315600	3312229	33157	33157	3313197100	3357100	3357100				3312229100	3315700	3315700	3313199	33553	33553				331222B	33159	33159	3313199100	3355300	3355300	331222B110	3315951	3315951				331222B120	3315955	3315955	331319A	33574 pt	33575 pt				331222B122	3315963	3315963	331319A100 pt	3357401	3357500 pt	331319A100 pt	3357400 pt	3357500 pt	331222B124	3315971	3315971	331319A100 pt	3357400 pt	3357500 pt	331222B126 pt	3315998 pt	3315942	331319C	33554	33554	331222B126 pt	3315998 pt	3315973	331319C100	3355400	3355400	331222B126 pt	3315998 pt	3315975	331319W pt	33550	33550	331222B126 pt	3315998 pt	3315975	331319W pt	33570 pt	33570 pt	331222BYVW	3315900	3315900	331319W pt	3357000 pt	3357000 pt	331222W	33150	33150	331319WYVW pt	3355000	3355000	331222WYVW	3315000 pt	3315000 pt	331319WYVW pt	3357000 pt	3357000 pt	331222WYVW	3315002 pt	3315002 pt	331319WYVW pt	3355002	3355002	3313110 pt	28190 pt	28190 pt	331319WYVW pt	3357002 pt	3357002 pt	3313110YVW	28195	28195	3314110 pt	33310	33310	3313110 pt	28195	28195	3314110 pt	33311	33311	3313110YVW	2819000 pt	2819000 pt	3314110100	3331100	3331100	3313110YVW	2819002 pt	2819002 pt	3314110106	3331217	3331217	3313121	33347	33347	3314110111	3331230	3331230	3313121100	3334700	3334700	3314110111	3331230	3331230	3313121100	3334700	3334700	3314110YVW pt	3331000	3331000	33131212100	3334800	3334800	3314110YVW pt	3331200	3331200	33131212100	3334800	3334800	3314110YVW pt	3331002	3331002	33131212100	3334800	3334800	3314191	33391	33391	3313121W	33340	33340	3314191100	3339100	3339100	3313121WYVW	3334000	3334000	3314191300	3339100	3339100	3313121WYVW	3334002	3334002	3314191301 pt	33392	33392	3313141	33417	33417	3314191301 pt	3339231 pt	3339234	3313141100	3341700	3341700	3314191301 pt	3339231 pt	3339244	3313141300	3341800	3341800	3314191301 pt	3339231 pt	3339255	3313145	33991 pt	33991 pt	3314191311	3339251	3339251	3313145100	3399111	3399111	33141913YVW	3339200	3339200	331314W pt	33410 pt	33410 pt	33141917	33395	33395	331314W pt	33410 pt	33410 pt	3314191701	3339525	3339525	3313151	33531	33531	3314191706	3339535	3339535	3313151101	3353113	3353113	33141917311	3339545	3339545	3313151106	3353115	3353115	33141917YVW	3339500	3339500	3313151YVW	3353100	3353100	33141919	33398	33398	33141919	33398	33398	33141919101	3339805	3339805	33141919101	3339805	3339805	33141919103	3339833	3339833	33141919103	3339833	3339833	33141919106 pt	3339851 pt	3339843	33141919106 pt	3339851 pt	3339843	33141919121	3339873	3339873	33141919121	3339873	3339873	33141919126 pt	3339889 pt	3339887	33141919126 pt	3339889 pt	3339887	33141919131	3339899	3339899	33141919131	3339899	3339899	33141919YVW	3339800	3339800	33141919YVW	3339800	3339800	331419W	33390	33390	331419W	33390	33390	331419WYVW	3339000	3339000	331419WYVW	3339000	3339000	331419WYVW	3339002	3339002	331419WYVW	3339002	3339002	3314211	33511	33511	3314211101	3351111	3351111	3314211206	3351131	3351131	3314211YVW	3351100	3351100	331421213	33513	33513	3314213101	3351311	3351311	3314213206	3351332	3351332	3314213YVW	3351300	3351300	3314217	33514	33514	3314217101	3351413	3351413	3314217206	3351435	3351435	3314217YVW	3351400	3351400







# Steel Wire Drawing

# 1997

Issued September 1999

EC97M-3312C

## 1997 Economic Census

*Manufacturing*

Industry Series



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# Steel Wire Drawing

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.



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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331222</b>	<b>Steel wire drawing</b> .....	<b>200</b>	<b>273</b>	<b>23 293</b>	<b>728 766</b>	<b>18 644</b>	<b>40 047</b>	<b>532 427</b>	<b>1 996 916</b>	<b>2 923 841</b>	<b>4 897 758</b>	<b>195 422</b>
331510	Steel wire & related products (pt) .....	N	273	23 293	728 766	18 644	40 047	532 427	1 996 916	2 923 841	4 897 758	195 422

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)	
	E <sup>1</sup>	Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)					Wages (\$1,000)
<b>331222, STEEL WIRE DRAWING</b>												
<b>United States</b> .....	-	<b>273</b>	<b>197</b>	<b>23 293</b>	<b>728 766</b>	<b>18 644</b>	<b>40 047</b>	<b>532 427</b>	<b>1 996 916</b>	<b>2 923 841</b>	<b>4 897 758</b>	<b>195 422</b>
Connecticut .....	-	13	7	574	20 201	481	1 109	15 981	53 143	94 182	146 125	4 253
Georgia .....	-	5	4	709	24 079	500	753	9 793	84 911	83 557	170 114	7 484
Illinois .....	-	22	15	1 677	47 628	1 196	2 349	33 480	136 744	166 789	291 489	11 207
Indiana .....	-	10	10	1 049	34 083	826	1 884	25 751	107 157	107 205	213 457	8 818
Maryland .....	-	6	4	507	15 330	424	893	11 757	35 272	62 113	94 998	2 078
Massachusetts .....	1	12	8	429	13 961	342	688	9 999	35 552	55 948	90 576	4 307
Michigan .....	-	5	5	730	21 828	649	1 238	17 590	74 394	74 785	150 351	3 628
Missouri .....	-	12	9	1 557	47 236	1 199	2 612	34 027	129 206	205 540	331 329	12 796
New Jersey .....	-	8	6	615	20 331	473	1 029	12 422	51 891	64 026	116 832	7 658
Ohio .....	-	11	9	1 230	45 163	917	2 090	28 945	96 930	161 261	257 078	7 770
Oklahoma .....	-	7	5	846	24 055	703	1 544	20 175	76 233	101 611	174 094	5 025
Pennsylvania .....	-	22	19	2 353	73 821	1 716	3 700	49 207	213 024	200 277	415 816	11 350
South Carolina .....	-	11	5	634	20 086	518	1 089	14 565	42 812	88 557	131 037	4 948
Tennessee .....	-	9	7	753	23 865	639	1 421	18 854	78 226	170 712	249 062	12 657
Texas .....	-	13	12	1 140	29 886	957	2 018	23 399	72 771	166 822	236 541	12 367
Wisconsin .....	-	5	4	438	13 814	278	486	7 505	23 478	27 199	51 708	4 397

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331222, STEEL WIRE DRAWING</b>		<b>331222, STEEL WIRE DRAWING—Con.</b>	
Companies <sup>1</sup> .....	number.. 200	Value added .....	\$.1,000.. 1 996 916
All establishments .....	number.. 273	Total inventories, beginning of year .....	\$.1,000.. 626 100
Establishments with 1 to 19 employees .....	number.. 76	Finished goods inventories, beginning of year .....	\$.1,000.. 235 570
Establishments with 20 to 99 employees .....	number.. 118	Work-in-process inventories, beginning of year .....	\$.1,000.. 124 466
Establishments with 100 employees or more .....	number.. 79	Materials and supplies inventories, beginning of year .....	\$.1,000.. 266 064
All employees .....	number.. 23 293	Total inventories, end of year .....	\$.1,000.. 704 130
Total compensation <sup>2</sup> .....	\$.1,000.. 930 654	Finished goods inventories, end of year .....	\$.1,000.. 259 148
Annual payroll .....	\$.1,000.. 728 766	Work-in-process inventories, end of year .....	\$.1,000.. 123 887
Total fringe benefits .....	\$.1,000.. 201 888	Materials and supplies inventories, end of year .....	\$.1,000.. 321 095
Production workers, average for year .....	number.. 18 644	Gross book value of total assets at beginning of year .....	\$.1,000.. 2 111 298
Production workers on March 12 .....	number.. 18 535	Total capital expenditures (new and used) .....	\$.1,000.. 195 422
Production workers on May 12 .....	number.. 18 674	Capital expenditures for buildings and other structures (new and used) .....	\$.1,000.. 38 953
Production workers on August 12 .....	number.. 18 693	Capital expenditures for machinery and equipment (new and used) .....	\$.1,000.. 156 469
Production workers on November 12 .....	number.. 18 674	Total retirements <sup>2</sup> .....	\$.1,000.. 59 425
Production-worker hours .....	1,000.. 40 047	Gross book value of total assets at end of year .....	\$.1,000.. 2 247 295
Production-worker wages .....	\$.1,000.. 532 427	Total depreciation during year <sup>2</sup> .....	\$.1,000.. 134 455
Total cost of materials .....	\$.1,000.. 2 923 841	Total rental payments <sup>2</sup> .....	\$.1,000.. 34 452
Cost of materials, parts, containers, etc., consumed .....	\$.1,000.. 2 658 038	Buildings and other structures rental payments <sup>2</sup> .....	\$.1,000.. 15 940
Cost of resales .....	\$.1,000.. 113 052	Machinery and equipment rental payments <sup>2</sup> .....	\$.1,000.. 18 512
Cost of fuels .....	\$.1,000.. 32 734	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$.1,000.. 7 044
Cost of purchased electricity .....	\$.1,000.. 82 963	Response coverage ratio <sup>4</sup> .....	percent.. 72
Cost of contract work .....	\$.1,000.. 37 054	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$.1,000.. 49 887
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 1 504 899	Response coverage ratio <sup>4</sup> .....	percent.. 72
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. -	Cost of purchased communications services <sup>3</sup> .....	\$.1,000.. 5 530
Total value of shipments .....	\$.1,000.. 4 897 758	Response coverage ratio <sup>4</sup> .....	percent.. 72
Primary products value of shipments .....	\$.1,000.. 4 577 716	Cost of purchased legal services <sup>3</sup> .....	\$.1,000.. 3 927
Secondary products value of shipments .....	\$.1,000.. 160 375	Response coverage ratio <sup>4</sup> .....	percent.. 72
Total miscellaneous receipts .....	\$.1,000.. 159 667	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$.1,000.. 2 939
Value of resales .....	\$.1,000.. 144 304	Response coverage ratio <sup>4</sup> .....	percent.. 72
Contract receipts .....	\$.1,000.. 7 249	Cost of purchased advertising services <sup>3</sup> .....	\$.1,000.. 3 034
Other miscellaneous receipts .....	\$.1,000.. 8 114	Response coverage ratio <sup>4</sup> .....	percent.. 72
Primary products specialization ratio .....	percent.. 96	Cost of purchased software and other data processing services <sup>3</sup> .....	\$.1,000.. 3 143
Value of primary products shipments made in all industries .....	\$.1,000.. 4 994 444	Response coverage ratio <sup>4</sup> .....	percent.. 72
Value of primary products shipments made in this industry .....	\$.1,000.. 4 577 716	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$.1,000.. 6 711
Value of primary products shipments made in other industries .....	\$.1,000.. 416 728	Response coverage ratio <sup>4</sup> .....	percent.. 72
Coverage ratio .....	percent.. 91		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331222, STEEL WIRE DRAWING</b>												
<b>All establishments . . . . .</b>	-	<b>273</b>	<b>197</b>	<b>23 293</b>	<b>728 766</b>	<b>18 644</b>	<b>40 047</b>	<b>532 427</b>	<b>1 996 916</b>	<b>2 923 841</b>	<b>4 897 758</b>	<b>195 422</b>
Establishments with 1 to 4 employees . . . . .	8	33	-	67	1 707	56	104	1 327	4 686	7 464	12 197	365
Establishments with 5 to 9 employees . . . . .	7	18	-	128	3 787	107	203	2 944	10 883	16 743	27 341	743
Establishments with 10 to 19 employees . . . . .	2	25	-	362	11 352	272	539	7 629	34 931	55 145	90 643	5 758
Establishments with 20 to 49 employees . . . . .	-	52	52	1 737	54 882	1 361	2 899	37 611	156 543	271 131	424 894	21 809
Establishments with 50 to 99 employees . . . . .	-	66	66	4 851	148 536	3 758	7 713	103 644	436 092	656 046	1 080 904	55 493
Establishments with 100 to 249 employees . . . . .	-	63	63	9 805	310 340	7 898	17 159	228 915	853 836	1 368 058	2 214 438	75 989
Establishments with 250 to 499 employees . . . . .	-	14	14	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees . . . . .	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees . . . . .	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more . . . . .	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> . . . . .	9	37	-	210	5 724	175	305	4 416	16 105	26 288	42 400	1 375

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331222</b>	<b>Steel wire drawing . . . . .</b>	<b>273</b>	<b>23 293</b>	<b>728 766</b>	<b>18 644</b>	<b>40 047</b>	<b>532 427</b>	<b>1 996 916</b>	<b>2 923 841</b>	<b>4 897 758</b>	<b>195 422</b>
3312221	Noninsulated ferrous wire rope, cable, and strand, made in plants that draw wire . . . . .	36	5 075	160 872	3 954	8 054	107 143	431 448	499 096	932 041	51 208
3312223	Steel nails, staples, tacks, spikes, and brads, made in plants that draw wire . . . . .	18	2 510	74 966	2 204	4 942	63 322	221 512	243 379	452 043	17 832
3312225	Steel wire, including galvanized and other coated wire, made in steel mills not producing wire rods or hot rolled bars, made in plants that draw wire . . . . .	82	8 007	272 303	6 269	13 814	198 173	766 804	1 411 573	2 176 007	86 826
3312227	Steel fencing and fence gates, made in plants that draw wire . . . . .	18	D	D	D	D	D	D	D	D	D
3312229	Ferrous wire cloth and other ferrous woven wire products, made in plants that draw wire . . . . .	2	D	D	D	D	D	D	D	D	D
331222B	Other fabricated ferrous wire products (except springs), made in plants that draw wire . . . . .	58	5 322	158 603	4 323	9 478	117 452	383 971	512 520	884 678	29 177

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendices]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331222</b>	<b>Steel wire and related products</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>4 994 444</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3312221	Noninsulated ferrous wire rope, cable, and strand, made in plants that draw wire @	N	X	X	977 995	N	X	X	937 256
33122211	Noninsulated ferrous wire rope and cable, wire forms, and wire strands, made in plants that draw wire	N	X	X	560 466	N	X	X	N
331222110	Noninsulated ferrous wire rope and cable made from steel wire, excluding fabricated wire rope assemblies, made in plants that draw wire \$	15	X	X	D	19	X	X	411 194
331222112	Noninsulated fabricated ferrous wire rope assemblies, including lifting slings, made in plants that draw wire \$	6	X	X	D	7	X	X	46 379
33122212	Noninsulated ferrous wire forms and strand, made in plants that draw wire	N	X	X	417 494	N	X	X	N
3312221214	Noninsulated ferrous wire forms and composite rope and cable, excluding rope assemblies, made in plants that draw wire \$	8	X	X	57 724	4	X	X	52 976
3312221222	Noninsulated ferrous wire strand, including strand for prestressed concrete, composite wire strand, except ACSR, and guard rail cable, made in plants that draw wire \$	18	X	X	359 770	21	X	X	426 410
3312221Y	Noninsulated ferrous wire rope, cable, and strand, made in plants that draw wire, nsk	N	X	X	35	N	X	X	N
3312221YWV	Noninsulated ferrous wire rope, cable, and strand, made in plants that draw wire, nsk	N	X	X	35	N	X	X	297
3312223	Steel nails, staples, tacks, spikes, and brads, made in plants that draw wire @	N	X	X	479 150	N	X	X	N
33122231	Steel nails, staples, tacks, spikes, and brads, made in plants that draw wire	N	X	X	479 150	N	X	X	N
3312223101	Round steel wire nails, collated, prepackaged, made in plants that draw wire \$ .1,000 s tons	5	X	229.7	99 674	N	X	N	N
3312223103	Galvanized round steel wire nails, not collated, smooth shank, coated, plated, or painted, made in plants that draw wire \$ .1,000 s tons	7	X	52.6	49 780	N	X	N	N
3312223105	Vinyl, resin, or cement coated round steel wire nails, not collated, smooth shank, coated, plated, or painted, made in plants that draw wire \$ .1,000 s tons	6	X	70.0	34 743	N	X	N	N
3312223107	Other coated, plated, or painted round steel wire nails, not collated, smooth shank, made in plants that draw wire \$ .1,000 s tons	3	X	4.9	3 490	N	X	N	N
3312223109	Round steel wire nails, not coated, plated, or painted, not collated, smooth shank, made in plants that draw wire \$ .1,000 s tons	4	X	47.9	28 205	N	X	N	N
3312223111	Round steel wire nails, coated, plated, or painted, not collated, other than smooth shank, made in plants that draw wire \$ .1,000 s tons	4	X	D	D	N	X	N	N
3312223113	Round steel wire nails, not coated, plated, or painted, not collated, other than smooth shank, made in plants that draw wire \$ .1,000 s tons	4	X	D	D	N	X	N	N
3312223122	Steel cut nails, including horseshoe nails, made in plants that draw wire \$	7	X	X	86 102	N	X	X	N
3312223124	Steel wire staples, made in plants that draw wire \$	7	X	X	109 325	N	X	X	N
3312223126	Steel tacks (wire and cut), made in plants that draw wire \$	-	X	X	-	N	X	X	N
3312223128	Steel spikes and brads, including track spikes, made in plants that draw wire \$	6	X	X	39 573	N	X	X	N
3312223Y	Steel nails, staples, tacks, spikes, and brads, made in plants that draw wire, nsk	N	X	X	-	N	X	X	N
3312223YWV	Steel nails, staples, tacks, spikes, and brads, made in plants that draw wire, nsk	N	X	X	-	N	X	X	N
3312225	Steel wire, including galvanized and other coated wire, made in steel mills not producing wire rods or hot rolled bars, made in plants that draw wire @	N	X	X	2 015 259	N	X	X	1 760 680
33122251	Steel wire, including galvanized and other coated wire, made in steel mills not producing wire rods or hot rolled bars, made in plants that draw wire	N	X	X	2 015 259	N	X	X	N
3312225100	Steel wire, including galvanized and other coated wire, made in steel mills not producing wire rods or hot rolled bars, made in plants that draw wire \$	79	X	X	2 015 259	94	X	X	1 760 680

See footnotes at end of table.



**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331222</b>	<b>Steel wire and related products</b> — Con.								
3312227	Steel fencing and fence gates, made in plants that draw wire	N	X	X	432 938	N	X	X	357 432
33122271	Steel fencing, excluding posts, gates, and fittings, including galvanized and plastics coated, made in plants that draw wire	N	X	X	429 193	N	X	X	N
3312227101	Chain link fencing, excluding posts, gates, and fittings, including galvanized and plastics coated, made in plants that draw wire \$	6	X	X	130 243	8	X	X	91 219
3312227110	Woven and welded fencing, excluding posts, gates, and fittings, including galvanized and plastics coated, made in plants that draw wire \$	13	X	X	244 094	11	X	X	209 334
3312227112	Steel fence gates, posts, and fittings and ornamental lawn fence, made in plants that draw wire \$	9	X	X	54 856	N	X	X	N
3312227Y	Steel fencing and fence gates, made in plants that draw wire, nsk	N	X	X	3 745	N	X	X	N
3312227YWW	Steel fencing and fence gates, made in plants that draw wire, nsk	N	X	X	3 745	N	X	X	D
3312229	Ferrous wire cloth and other ferrous woven wire products, made in plants that draw wire @	N	X	X	102 207	N	X	X	109 898
33122291	Ferrous wire cloth and other ferrous woven wire products, made in plants that draw wire	N	X	X	102 207	N	X	X	N
3312229100	Ferrous wire cloth and other ferrous woven wire products, made in plants that draw wire \$	7	X	X	102 207	13	X	X	109 898
331222B	Other fabricated ferrous wire products (except springs), made in plants that draw wire	N	X	X	903 311	N	X	X	627 404
331222B1	Other fabricated ferrous wire products (except springs), made in plants that draw wire	N	X	X	903 261	N	X	X	N
331222B110	Barbed and twisted ferrous wire, made in plants that draw wire \$	8	X	X	81 050	9	X	X	146 624
331222B120	Ferrous wire bale ties, made in plants that draw wire \$	6	X	X	38 887	9	X	X	23 470
331222B122	Welded steel wire fabrics, including concrete reinforcing mesh, made in plants that draw wire \$	11	X	X	279 025	11	X	X	132 831
331222B124	Ferrous wire garment hangers, made in plants that draw wire \$	6	X	X	147 753	4	X	X	121 222
331222B126	Other ferrous wire products, including guards, baskets, florists' designs, paperclips, kitchenware, wire shelving, racks, chain, carts, cages, etc. (except springs), made in plants that draw wire \$	36	X	X	356 546	N	X	X	N
331222BY	Other fabricated ferrous wire products (except springs), made in plants that draw wire, nsk	N	X	X	50	N	X	X	N
331222BYWV	Other fabricated ferrous wire products (except springs), made in plants that draw wire, nsk	N	X	X	50	N	X	X	—
331222W	Steel wire and related products, nsk, total	N	X	X	83 584	N	X	X	N
331222WY	Steel wire and related products, nsk, total	N	X	X	83 584	N	X	X	N
331222WYWW	Steel wire and related products, nsk, for nonadministrative-record establishments	N	X	X	42 540	N	X	X	N
331222WYWY	Steel wire and related products, nsk, for administrative-record establishments	N	X	X	41 044	N	X	X	N

# Additional information is available for this item: see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3312221</b>	<b>NONINSULATED FERROUS WIRE ROPE, CABLE, AND STRAND, MADE IN PLANTS THAT DRAW WIRE @</b>		
	United States .....	<b>977 995</b>	<b>937 256</b>
	Arkansas .....	75 616	45 471
	California .....	49 579	N
	Missouri .....	145 875	N
	Pennsylvania .....	131 187	71 259
<b>3312223</b>	<b>STEEL NAILS, STAPLES, TACKS, SPIKES, AND BRADS, MADE IN PLANTS THAT DRAW WIRE @</b>		
	United States .....	<b>479 150</b>	<b>N</b>
	California .....	49 741	N
	Illinois .....	130 822	N
<b>3312225</b>	<b>STEEL WIRE, INCLUDING GALVANIZED AND OTHER COATED WIRE, MADE IN STEEL MILLS NOT PRODUCING WIRE RODS OR HOT ROLLED BARS, MADE IN PLANTS THAT DRAW WIRE @</b>		
	United States .....	<b>2 015 259</b>	<b>1 760 680</b>
	California .....	170 908	119 463
	Connecticut .....	129 816	115 975
	Illinois .....	108 712	105 818
	Indiana .....	157 707	131 386
	Kentucky .....	114 078	N
	Massachusetts .....	49 208	46 226
	Michigan .....	94 910	86 465
	New Jersey .....	55 141	N
	Ohio .....	193 127	126 079
	Pennsylvania .....	48 907	71 347
	South Carolina .....	68 157	N
	Tennessee .....	171 242	178 633
<b>3312227</b>	<b>STEEL FENCING AND FENCE GATES, MADE IN PLANTS THAT DRAW WIRE</b>		
	United States .....	<b>432 938</b>	<b>357 432</b>
	Illinois .....	72 077	95 989
	Oklahoma .....	60 429	32 515
	Texas .....	63 680	27 776
<b>3312229</b>	<b>FERROUS WIRE CLOTH AND OTHER FERROUS WOVEN WIRE PRODUCTS, MADE IN PLANTS THAT DRAW WIRE @</b>		
	United States .....	<b>102 207</b>	<b>109 898</b>
<b>331222B</b>	<b>OTHER FABRICATED FERROUS WIRE PRODUCTS (EXCEPT SPRINGS), MADE IN PLANTS THAT DRAW WIRE</b>		
	United States .....	<b>903 311</b>	<b>627 404</b>
	California .....	50 185	N
	Florida .....	57 899	27 290
	Illinois .....	85 491	84 185
	Indiana .....	12 197	19 812
	Missouri .....	51 154	N
	Ohio .....	61 626	44 318
	Pennsylvania .....	164 514	128 683
	Texas .....	52 024	19 475

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331222</b>	<b>STEEL WIRE DRAWING</b>				
33120081	Steel rod for wiredrawing .....	1,000 s tons..		N	N
33120067	Steel wire for redrawing .....	1,000 s tons..		N	N
33120075	All other steel shapes and forms (except castings, forgings, and fabricated metal products) .....				
33111203	Ferromanganese, silicomanganese, and manganese shapes and forms (exc. castings, forgings, and fabricated metal products) .....	1,000 s tons..		N	N
33111205	Ferrochromium shapes and forms (except castings, forgings, and fabricated metal products) .....	1,000 s tons..		N	N

See footnotes at end of table.

**Table 7. Materials Consumed by Kind: 1997 and 1992—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331222</b>	<b>STEEL WIRE DRAWING—Con.</b>				
33111209	Ferrovandium . . . . .1,000 s tons..	D	D	N	N
33111201	Other ferroalloy shapes and forms (including silvery iron, ferrotungsten, ferromolybdenum, ferronickel, etc.) . . . . .1,000 s tons..	—	—	N	N
331000AE	All other ferrous shapes and forms (except castings, forgings, and fabricated metal products) . . . . .1,000 s tons..	D	D	N	N
33100039	Aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	4 297	X	N
33141933	Nickel (except ferronickel) shapes and forms (except castings, forgings, and fabricated metal products) . . . . .1,000 s tons..	0.1	1 498	N	N
33141939	Tin shapes and forms (except castings, forgings, and fabricated metal products) . . . . .1,000 s tons..	D	D	N	N
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products) . . . . .1,000 s tons..	27.4	33 511	N	N
33141913	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	13 002	X	N
33151007	All other iron and steel castings . . . . .	X	D	X	N
32712400	Clay refractories . . . . .	X	—	X	N
32741007	Lime fluxes, including quicklime . . . . .	X	D	X	N
32799211	Other fluxes . . . . .	X	D	X	N
32500011	Industrial chemicals (except sulfuric acid and oxygen) . . . . .	X	6 898	X	N
32512003	Oxygen (including high and low purity) (liquid oxygen should be converted to its gaseous equivalent) . . . . .	X	D	X	N
32518803	Sulfuric acid (new and spent) (100 percent H2SO4) . . . . .	X	586	X	N
32500039	All other chemicals and allied products . . . . .	X	9 145	X	N
00190023	Iron and steel scrap, excluding home scrap . . . . .1,000 s tons..	—	—	N	N
33120045	Pig iron shapes and forms (except silvery iron, castings, forgings, and fabricated metal products) . . . . .1,000 s tons..	D	D	N	N
32410017	Lubricating oils and greases and other petroleum products . . . . .	X	7 397	X	N
33350003	Industrial dies, molds, jigs, and fixtures . . . . .	X	9 881	X	N
00970099	All other materials and components, parts, containers, and supplies . . . . .	X	387 224	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. . . . .	X	143 216	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.



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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331222 STEEL WIRE DRAWING**

This U.S. industry comprises establishments primarily engaged in drawing wire from purchased steel.

The data published with NAICS code 331222 include the following SIC industry:

3315 Steel wire and related products (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.



# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F.

## Footnotes for Products Statistics and Materials Consumed by Kind

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### Part 1. Products Statistics (Tables 6a and 6b)

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NAICS product code	Footnote
@3312221 .....	For additional detail, see Current Industrial Report MA331B, Steel Mill Products.
\$ 3312221110 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3312221112 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3312221214 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3312221222 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
@3312223 .....	For additional detail, see Current Industrial Report MA331B, Steel Mill Products.
\$ 3312223101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3312223103 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3312223105 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3312223107 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3312223109 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3312223111 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3312223113 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3312223122 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3312223124 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3312223126 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3312223128 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
@3312225 .....	For additional detail, see Current Industrial Report MA331B, Steel Mill Products.
\$ 3312225100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3312227101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

**Part 1. Products Statistics (Tables 6a and 6b)—Con.**

NAICS product code	Footnote
\$ 3312227110 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3312227112 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
@3312229 .....	For additional detail, see Current Industrial Report MA331B, Steel Mill Products.
\$ 3312229100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331222B110 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331222B120 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331222B122 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331222B124 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331222B126 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

**Part 2. Materials Consumed by Kind (Table 7)**

Not applicable.







# Alumina Refining

# 1997

Issued October 1999

EC97M-3313A

## 1997 Economic Census

*Manufacturing*

Industry Series



## U S C E N S U S B U R E A U

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Economics and Statistics Administration  
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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331311</b> 281940	<b>Alumina refining</b> .....	<b>6</b>	<b>7</b>	<b>3 153</b>	<b>155 877</b>	<b>2 354</b>	<b>5 216</b>	<b>105 465</b>	<b>351 414</b>	<b>832 815</b>	<b>1 257 211</b>	<b>111 817</b>
	Industrial inorganic chemicals, n.e.c. (pt) .....	N	7	3 153	155 877	2 354	5 216	105 465	351 414	832 815	1 257 211	111 817

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331311, ALUMINA REFINING</b>												
<b>United States</b> .....	-	7	7	3 153	155 877	2 354	5 216	105 465	351 414	832 815	1 257 211	111 817

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331311, ALUMINA REFINING</b>		<b>331311, ALUMINA REFINING—Con.</b>	
Companies <sup>1</sup> . . . . . number..	6	Value added . . . . . \$1,000..	351 414
All establishments . . . . . number..	7	Total inventories, beginning of year . . . . . \$1,000..	213 586
Establishments with 1 to 19 employees . . . . . number..	—	Finished goods inventories, beginning of year . . . . . \$1,000..	25 792
Establishments with 20 to 99 employees . . . . . number..	1	Work-in-process inventories, beginning of year . . . . . \$1,000..	130 718
Establishments with 100 employees or more . . . . . number..	6	Materials and supplies inventories, beginning of year . . . . . \$1,000..	57 076
All employees . . . . . number..	3 153	Total inventories, end of year . . . . . \$1,000..	189 078
Total compensation <sup>2</sup> . . . . . \$1,000..	211 991	Finished goods inventories, end of year . . . . . \$1,000..	28 426
Annual payroll . . . . . \$1,000..	155 877	Work-in-process inventories, end of year . . . . . \$1,000..	55 102
Total fringe benefits . . . . . \$1,000..	56 114	Materials and supplies inventories, end of year . . . . . \$1,000..	105 550
Production workers, average for year . . . . . number..	2 354	Gross book value of total assets at beginning of year . . . . . \$1,000..	1 455 551
Production workers on March 12 . . . . . number..	2 357	Total capital expenditures (new and used) . . . . . \$1,000..	111 817
Production workers on May 12 . . . . . number..	2 330	Capital expenditures for buildings and other structures (new and used) . . . . . \$1,000..	D
Production workers on August 12 . . . . . number..	2 335	Capital expenditures for machinery and equipment (new and used) . . . . . \$1,000..	D
Production workers on November 12 . . . . . number..	2 394	Total retirements <sup>2</sup> . . . . . \$1,000..	39 323
Production-worker hours . . . . . 1,000..	5 216	Gross book value of total assets at end of year . . . . . \$1,000..	1 528 045
Production-worker wages . . . . . \$1,000..	105 465	Total depreciation during year <sup>2</sup> . . . . . \$1,000..	59 206
Total cost of materials . . . . . \$1,000..	832 815	Total rental payments <sup>2</sup> . . . . . \$1,000..	8 323
Cost of materials, parts, containers, etc., consumed . . . . . \$1,000..	639 287	Buildings and other structures rental payments <sup>2</sup> . . . . . \$1,000..	D
Cost of resales . . . . . \$1,000..	—	Machinery and equipment rental payments <sup>2</sup> . . . . . \$1,000..	D
Cost of fuels . . . . . \$1,000..	158 003	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> . . . . . \$1,000..	4 658
Cost of purchased electricity . . . . . \$1,000..	17 142	Response coverage ratio <sup>4</sup> . . . . . percent..	100
Cost of contract work . . . . . \$1,000..	18 383	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> . . . . . \$1,000..	33 365
Quantity of electricity purchased for heat and power . . . . . 1,000 kWh..	378 292	Response coverage ratio <sup>4</sup> . . . . . percent..	100
Quantity of electricity generated less sold for heat and power . . . . . 1,000 kWh..	658 309	Cost of purchased communications services <sup>3</sup> . . . . . \$1,000..	952
Total value of shipments . . . . . \$1,000..	1 257 211	Response coverage ratio <sup>4</sup> . . . . . percent..	100
Primary products value of shipments . . . . . \$1,000..	1 015 199	Cost of purchased legal services <sup>3</sup> . . . . . \$1,000..	823
Secondary products value of shipments . . . . . \$1,000..	242 012	Response coverage ratio <sup>4</sup> . . . . . percent..	100
Total miscellaneous receipts . . . . . \$1,000..	—	Cost of purchased accounting and bookkeeping services <sup>3</sup> . . . . . \$1,000..	30
Value of resales . . . . . \$1,000..	—	Response coverage ratio <sup>4</sup> . . . . . percent..	100
Contract receipts . . . . . \$1,000..	—	Cost of purchased advertising services <sup>3</sup> . . . . . \$1,000..	28
Other miscellaneous receipts . . . . . \$1,000..	—	Response coverage ratio <sup>4</sup> . . . . . percent..	100
Primary products specialization ratio . . . . . percent..	80	Cost of purchased software and other data processing services <sup>3</sup> . . . . . \$1,000..	1 004
Value of primary products shipments made in all industries . . . . . \$1,000..	1 046 296	Response coverage ratio <sup>4</sup> . . . . . percent..	100
Value of primary products shipments made in this industry . . . . . \$1,000..	1 015 199	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> . . . . . \$1,000..	544
Value of primary products shipments made in other industries . . . . . \$1,000..	31 097	Response coverage ratio <sup>4</sup> . . . . . percent..	100
Coverage ratio . . . . . percent..	97		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331311, ALUMINA REFINING</b>												
<b>All establishments . . . . .</b>	-	7	7	3 153	155 877	2 354	5 216	105 465	351 414	832 815	1 257 211	111 817
Establishments with 1 to 4 employees . . . . .	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 5 to 9 employees . . . . .	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 10 to 19 employees . . . . .	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 20 to 49 employees . . . . .	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 50 to 99 employees . . . . .	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 100 to 249 employees . . . . .	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 250 to 499 employees . . . . .	-	2	2	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees . . . . .	-	3	3	2 284	118 062	1 671	3 762	78 045	255 461	657 551	977 765	85 569
Establishments with 1,000 to 2,499 employees . . . . .	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 2,500 employees or more . . . . .	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> . . . . .	-	-	-	-	-	-	-	-	-	-	-	-

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
331311	Alumina refining . . . . .	7	3 153	155 877	2 354	5 216	105 465	351 414	832 815	1 257 211	111 817

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331311</b>	<b>Alumina .....</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>1 046 296</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3313110	Aluminum oxide, except natural alumina @ .....	N	X	X	1 046 296	N	X	X	N
33131101	Aluminum oxide, except natural alumina .....	N	X	X	1 046 296	N	X	X	N
3313110100	Aluminum oxide, except natural alumina .....	10	X	X	1 046 296	15	X	X	967 559
3313110Y	Aluminum oxide, except natural alumina, nsk .....	N	X	X	-	N	X	X	N
3313110YWW	Aluminum oxide, except natural alumina, nsk, for nonadministrative-record establishments .....	N	X	X	-	N	X	X	N
3313110YWY	Aluminum oxide, except natural alumina, nsk, for administrative-record establishments .....	N	X	X	-	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331311</b>	<b>ALUMINA REFINING</b>				
32518805	Sulfuric acid (100 percent H2SO4), except spent .....	D	D	N	N
32518105	Sodium carbonate (soda ash) (58 percent Na2O) .....	D	D	N	N
32518107	Sodium hydroxide (caustic soda)(100 percent NaOH) .....	q187.2	25 065	N	N
325000A5	Other industrial inorganic chemicals .....	X	34 394	X	N
32510091	Synthetic organic chemicals .....	X	D	X	N
21229903	Bauxite .....	11 741.7	367 476	N	N
21239001	All other crude chemical nonmetallic minerals, including barite, borate, potash, fluorspar, rock salt, etc. ....	X	D	X	N
33300015	Parts and attachments for machinery and equipment .....	X	63 571	X	N
32221001	Paperboard containers, boxes, and corrugated paperboard .....	X	-	X	N
33240000	Metal containers .....	X	D	X	N
00970099	All other materials and components, parts, containers, and supplies .....	X	115 375	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	-	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It



includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331311 ALUMINA REFINING**

This U.S. industry comprises establishments primarily engaged in refining alumina (i.e., aluminum oxide) generally from bauxite.

The data published with NAICS code 331311 include the following SIC industry:

2819 Industrial inorganic chemicals, n.e.c. (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.



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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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## Part 1. **Products Statistics (Tables 6a and 6b)**

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NAICS product code	Footnote
@3313110 .....	For additional detail, see Current Industrial Report MA325A, Inorganic Chemicals.

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## Part 2. **Materials Consumed by Kind (Table 7)**

Not applicable.

# Appendix G.

## Comparability of Product Classes and Product Codes:

### 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33111111	33121 pt	33121 pt	3312223	33152 pt	33152 pt	3313161	33541	33541
3311111101	331215	331211 pt	3312223101	3315251	3315201 pt	3313161101	3354115	3354115
3311111103	3312116	3312112 pt	3312223103	3315252	3315203 pt	3313161206	3354118	3354118
3311111105	3312153	3312151 pt	3312223105	3315253	3315205 pt	3313161311	3354125	3354125
3311111107	3312173	3312171 pt	3312223107	3315254	3315207 pt	3313161416	3354128	3354128
3311111109 pt	3312196 pt	3312131 pt	3312223109	3315255	3315209 pt	3313161YVW	3354100	3354100
3311111109 pt	3312196 pt	3312197 pt	3312223111 pt	3315214 pt	3315210 pt	3313163	33542	33542
3311111111	3312191	3312191	3312223111 pt	3315214 pt	3315213 pt	3313163101	3354261	3354261
3311111113	3312192	3312192	3312223113	3315256	3315216 pt	3313163106	3354263	3354263
3311111115 pt	3312195 pt	3312193	3312223122	3315257	3315222 pt	3313163YVW	3354200	3354200
3311111115 pt	3312195 pt	3312194	3312223124	3315258	3315223 pt	331316W	33540	33540
3311111117	3312198	3312198	3312223126	3315259	3315225 pt	331316WYVW	3354000	3354000
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# Primary Aluminum Production

# 1997

Issued September 1999

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## 1997 Economic Census

*Manufacturing*

Industry Series



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# Primary Aluminum Production

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.



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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331312</b>	<b>Primary aluminum production . . . . .</b>	<b>13</b>	<b>21</b>	<b>15 763</b>	<b>707 402</b>	<b>12 624</b>	<b>26 074</b>	<b>512 941</b>	<b>2 432 391</b>	<b>3 707 431</b>	<b>6 224 610</b>	<b>252 588</b>
333400	Primary aluminum . . . . .	N	21	15 763	707 402	12 624	26 074	512 941	2 432 391	3 707 431	6 224 610	252 588

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331312, PRIMARY ALUMINUM PRODUCTION</b>												
<b>United States . . . . .</b>	-	<b>21</b>	<b>21</b>	<b>15 763</b>	<b>707 402</b>	<b>12 624</b>	<b>26 074</b>	<b>512 941</b>	<b>2 432 391</b>	<b>3 707 431</b>	<b>6 224 610</b>	<b>252 588</b>

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331312, PRIMARY ALUMINUM PRODUCTION</b>		<b>331312, PRIMARY ALUMINUM PRODUCTION— Con.</b>	
Companies <sup>1</sup> .....	number.. 13	Value added .....	\$1,000.. 2 432 391
All establishments .....	number.. 21	Total inventories, beginning of year .....	\$1,000.. 721 611
Establishments with 1 to 19 employees .....	number.. —	Finished goods inventories, beginning of year .....	\$1,000.. 97 227
Establishments with 20 to 99 employees .....	number.. —	Work-in-process inventories, beginning of year .....	\$1,000.. 209 642
Establishments with 100 employees or more .....	number.. 21	Materials and supplies inventories, beginning of year .....	\$1,000.. 414 742
All employees .....	number.. 15 763	Total inventories, end of year .....	\$1,000.. 677 119
Total compensation <sup>2</sup> .....	\$1,000.. 959 564	Finished goods inventories, end of year .....	\$1,000.. 126 579
Annual payroll .....	\$1,000.. 707 402	Work-in-process inventories, end of year .....	\$1,000.. 95 502
Total fringe benefits .....	\$1,000.. 252 162	Materials and supplies inventories, end of year .....	\$1,000.. 455 038
Production workers, average for year .....	number.. 12 624	Gross book value of total assets at beginning of year .....	\$1,000.. 4 695 529
Production workers on March 12 .....	number.. 12 638	Total capital expenditures (new and used) .....	\$1,000.. 252 588
Production workers on May 12 .....	number.. 12 575	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 46 093
Production workers on August 12 .....	number.. 12 674	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 206 495
Production workers on November 12 .....	number.. 12 609	Total retirements <sup>2</sup> .....	\$1,000.. 52 110
Production-worker hours .....	\$1,000.. 26 074	Gross book value of total assets at end of year .....	\$1,000.. 4 896 007
Production-worker wages .....	\$1,000.. 512 941	Total depreciation during year <sup>2</sup> .....	\$1,000.. 223 397
Total cost of materials .....	\$1,000.. 3 707 431	Total rental payments <sup>2</sup> .....	\$1,000.. 5 616
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 2 474 128	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 708
Cost of resales .....	\$1,000.. D	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 4 908
Cost of fuels .....	\$1,000.. 113 031	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 23 207
Cost of purchased electricity .....	\$1,000.. 1 070 993	Response coverage ratio <sup>4</sup> .....	percent.. 96
Cost of contract work .....	\$1,000.. D	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 73 521
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 43 426 337	Response coverage ratio <sup>4</sup> .....	percent.. 96
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. S	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 2 904
Total value of shipments .....	\$1,000.. 6 224 610	Response coverage ratio <sup>4</sup> .....	percent.. 96
Primary products value of shipments .....	\$1,000.. D	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 14 261
Secondary products value of shipments .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 96
Total miscellaneous receipts .....	\$1,000.. D	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 1 612
Value of resales .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 96
Contract receipts .....	\$1,000.. D	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 437
Other miscellaneous receipts .....	\$1,000.. 20 113	Response coverage ratio <sup>4</sup> .....	percent.. 96
Primary products specialization ratio .....	percent.. D	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 4 002
Value of primary products shipments made in all industries .....	\$1,000.. 6 116 371	Response coverage ratio <sup>4</sup> .....	percent.. 96
Value of primary products shipments made in this industry .....	\$1,000.. D	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 21 769
Value of primary products shipments made in other industries .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 96
Coverage ratio .....	percent.. D		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)	
	E <sup>1</sup>	Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)					Wages (\$1,000)
<b>331312, PRIMARY ALUMINUM PRODUCTION</b>												
<b>All establishments .....</b>	-	21	21	15 763	707 402	12 624	26 074	512 941	2 432 391	3 707 431	6 224 610	252 588
Establishments with 1 to 4 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 5 to 9 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 10 to 19 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 20 to 49 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 50 to 99 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 100 to 249 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 250 to 499 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees .....	-	14	14	9 248	419 126	7 460	15 508	306 970	1 396 588	2 331 386	3 812 454	139 360
Establishments with 1,000 to 2,499 employees .....	-	5	5	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	-	-	-	-	-	-	-	-	-	-	-	-

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331312</b>	<b>Primary aluminum production .....</b>	<b>21</b>	<b>15 763</b>	<b>707 402</b>	<b>12 624</b>	<b>26 074</b>	<b>512 941</b>	<b>2 432 391</b>	<b>3 707 431</b>	<b>6 224 610</b>	<b>252 588</b>
3313121	Primary aluminum ingot, produced in primary aluminum reduction plants, including pigs, sows, and molten metal, excluding billet .....	18	D	D	D	D	D	D	D	D	D
3313123	Primary aluminum extrusion ingot (billet), produced in primary aluminum reduction plants .....	2	D	D	D	D	D	D	D	D	D

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331312</b>	<b>Primary aluminum</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>6 116 371</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>5 027 964</b>
3313121	Primary aluminum ingot, produced in primary aluminum reduction plants, including pigs, sows, and molten metal, excluding billet .....	N	X	X	4 881 718	N	X	X	4 032 332
33131211	Primary aluminum ingot, produced in primary aluminum reduction plants, including pigs, sows, and molten metal, excluding billet .....	N	X	X	4 881 718	N	X	X	N
3313121100	Primary aluminum ingot, produced in primary aluminum reduction plants, including pigs, sows, and molten metal, excluding billet \$ .....1,000 s tons ..	15	3 744.0	P3 570.9	4 881 718	20	P4 598.4	4 429.6	4 032 332
3313123	Primary aluminum extrusion ingot (billet), produced in primary aluminum reduction plants .....	N	X	X	1 234 653	N	X	X	992 736
33131231	Primary aluminum extrusion ingot (billet), produced in primary aluminum reduction plants .....	N	X	X	1 234 653	N	X	X	N
3313123100	Primary aluminum extrusion ingot (billet), produced in primary aluminum reduction plants \$ .....1,000 s tons ..	11	950.7	920.3	1 234 653	13	P775.2	739.5	992 736
331312W	Primary aluminum, nsk, total .....	N	X	X	-	N	X	X	2 896
331312WY	Primary aluminum, nsk .....	N	X	X	-	N	X	X	N
331312WYWW	Primary production of aluminum, nsk, for nonadministrative-record establishments .....	N	X	X	-	N	X	X	2 896
331312WYWY	Primary aluminum, nsk, for administrative-record establishments .....	N	X	X	-	N	X	X	-

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3313121</b>	<b>PRIMARY ALUMINUM INGOT, PRODUCED IN PRIMARY ALUMINUM REDUCTION PLANTS, INCLUDING PIGS, SOWS, AND MOLTEN METAL, EXCLUDING BILLET</b>		
	United States .....	<b>4 881 718</b>	<b>4 032 332</b>
	Washington .....	1 217 782	1 304 760
<b>3313123</b>	<b>PRIMARY ALUMINUM EXTRUSION INGOT (BILLET), PRODUCED IN PRIMARY ALUMINUM REDUCTION PLANTS</b>		
	United States .....	<b>1 234 653</b>	<b>992 736</b>
	Washington .....	300 616	156 398

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.



**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331312</b>	<b>PRIMARY ALUMINUM PRODUCTION</b>				
33131209	Aluminum and aluminum-base alloy ingot .....1,000 s tons..	162.4	246 505	98.5	42 826
33100009	All other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	183 113	X	40 347
33141103	Refined unalloyed copper (cathodes, ingots, cakes, slabs, etc.) and blister or anode copper .....1,000 s tons..	D	D	D	D
33100015	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	2 797	X	797
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	0.5	520	N	N
33141937	Magnesium and magnesium-base alloy ingot .....	X	52 638	X	19 869
33141907	All other magnesium and magnesium-base alloy shapes and forms (except castings, forgings, and fabr. metal products) .....	X	15 246	X	2 226
33141927	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	47 331	X	25 129
00190040	Aluminum and aluminum-base alloy scrap (except home scrap).....1,000 s tons..	D	D	N	N
00190024	Copper and copper-base alloy scrap (except home scrap).....1,000 s tons..	0.4	841	D	D
00190025	Lead and lead-base alloy scrap .....	X	-	X	D
00190026	Zinc and zinc-base alloy scrap (including drosses and skimmings) .....	X	-	X	D
00190052	All other nonferrous metal and metal-base alloy scrap .....	X	-	X	D
33131100	Alumina (gross weight) .....1,000 s tons..	6 209.6	1 266 680	11 048.3	1 401 473
00970099	All other materials and components, parts, containers, and supplies .....	X	631 398	X	936 855
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	-	X	1 592

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331312 PRIMARY ALUMINUM PRODUCTION**

This U.S. industry comprises establishments primarily engaged in (1) making aluminum from alumina and/or (2) making aluminum from alumina and rolling, drawing, extruding, or casting the aluminum they make into primary forms (e.g., bar, billet, ingot, plate, rod, sheet, strip).

Establishments in this industry may make primary aluminum or aluminum-based alloys from alumina.

The data published with NAICS code 331312 include the following SIC industry:

3334 Primary aluminum



# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.



# Appendix F.

## Footnotes for Products Statistics and Materials Consumed by Kind

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### Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
\$ 3313121100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3313123100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

### Part 2. Materials Consumed by Kind (Table 7)

Not applicable.



1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3314219	33515	33515	3314921	33991 pt	33991 pt	331511A	33221	33221
3314219101	3351516	3351516	3314921101	3399166	3399166	331511A100	3322100	3322100
3314219211	3351536	3351536	3314921206	3399177	3399177	331511C	33222	33222
3314219306	3351518	3351518	3314921311	3399186	3399186	331511C300	3322200	3322200
3314219316	3351538	3351538	3314921416 pt	3399189 pt	3399187	331511E	33216	33216
3314219YVW	3351500	3351500	3314921416 pt	3399189 pt	3399188	331511E200	3321600	3321600
331421W	33510	33510	3314921426	3399191	3399191	331511W pt	33210	33210
331421WYWW	3351000	3351000	3314921431	3399198	3399198	331511W pt	33220	33220
331421WYWW	3351002	3351002	3314921YVW	3399100 pt	3399100 pt	331511WYVW pt	3321000	3321000
3314221	33572	33572	3314923101	33413	33413	331511WYVW pt	3322000	3322000
3314221101	3357211	3357211	3314923101	3341311	3341311	331511WYVW pt	3321002	3321002
3314221106	3357251	3357251	3314923206	3341321	3341321	331511WYVY pt	3322002	3322002
3314221211	3357271	3357271	3314923211	3341333	3341333	3315120	33240	33240
3314221216	3357281	3357281	3314923216	3341351	3341351	3315120101	3324063	3324063
3314221YVW	3357200	3357200	3314923221	3341399	3341399	3315120106	3324064	3324064
3314223	33574 pt	33575 pt	3314923YVW	3341300	3341300	3315120216	3324067	3324067
3314223300 pt	3357402	3357500 pt	3314927	33414	33414	3315120311	3324066	3324066
3314223300 pt	3357400 pt	3357500 pt	3314927101 pt	3341431 pt	3341405	3315120YVW	3324000	3324000
331422W	33570 pt	33570 pt	3314927101 pt	3341431 pt	3341434	3315120YVY	3324002	3324002
331422WYVW	3357000 pt	3357000 pt	3314927101 pt	3341431 pt	3341444	3315131	33252	33252
331422WYVY	3357002 pt	3357002 pt	3314927206	3341411	3341411	3315131101	3325211	3325211
3314230 pt	33410 pt	33410 pt	3314927YVW	3341400	3341400	3315131206	3325215	3325215
3314230 pt	33412	33412	3314929	33415	33415	3315131211	3325219	3325219
3314230 pt	33990 pt	33990 pt	3314929101	3341525	3341525	3315131YVW	3325200	3325200
3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315133	33254	33254
3314230101	3341224	3341224	3314929211	3341545	3341545	3315133101	3325421	3325421
3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133106	3325431	3325431
3314230206	3341226	3341226	331492A pt	33134 pt	33134 pt	3315133YVW	3325400	3325400
3314230311	3341231	3341231	331492A pt	33416	33416	3315135	33255	33255
3314230YVW pt	3341000 pt	3341000 pt	331492A101 pt	3313417	3313415 pt	3315135101	3325551	3325551
3314230YVW pt	3341200	3341200	331492A101 pt	3341633	3341633	3315135106	3325555	3325555
3314230YVW pt	3399000 pt	3399000 pt	331492A106	3341635	3341635	3315135111	3325559	3325559
3314230YVW pt	3399100 pt	3399100 pt	331492A111	3341671	3341671	3315135YVW	3325500	3325500
3314230YVY pt	3341002 pt	3341002 pt	331492A116	3341697	3341697	331513W	33250	33250
3314230YVY pt	3399002 pt	3399002 pt	331492A206	3313488	3313489 pt	331513WYVW	3325000	3325000
3314911	33561	33561	331492A311	3313499	3313498 pt	331513WYVY	3325002	3325002
3314911101	3356161	3356161	331492AYVW pt	3313400 pt	3313400 pt	3315210	33630	33630
3314911106	3356164	3356164	331492AYVW pt	3341600	3341600	3315210000	3363000 pt	3363000 pt
3314911111	3356165	3356165	331492W pt	33130 pt	33130 pt	3315210YVW	3363002	3363002
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3314911YVW	3356100	3356100	331492WYVW pt	33990 pt	33990 pt	3315220101	3364011	3364011
3314913	33562	33562	331492WYVW pt	3313000 pt	3313000 pt	3315220206	3364021	3364021
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3314913106	3356274	3356274	331492WYVW pt	3399000 pt	3399000 pt	3315220416	3364041	3364041
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3314915100	3357300	3357300	331511106	3321123	3321123	3315240	33650	33650
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3314919	33563	33563	3315111201	3321121	3321121	3315240416	3365073	3365073
3314919101	3356381	3356381	3315111YVW	3321100	3321100	3315240421	3365061	3365061
3314919106	3356383	3356383	3315113	33212	33212	3315240YVW	3365000	3365000
3314919111	3356386	3356386	3315113101	3321222	3321222	3315240YVY	3365002	3365002
3314919116	3356391	3356391	3315113206	3321224	3321224	3315250	33660	33660
3314919YVW	3356300	3356300	3315113211	3321231	3321231	3315250101	3366020	3366020
331491C	33569	33569	3315113216	3321233	3321233	3315250206	3366021	3366021
331491C101	3356934	3356934	3315113221	3321240	3321240	3315250221	3366025	3366025
331491C106	3356951	3356951	3315113YVW	3321200	3321200	3315250411	3366022	3366022
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331491E	33576	33576	3315117	33218	33218	3315250651	3366072	3366072
331491E100	3357600	3357600	3315117101	3321822	3321822	3315250YVW	3366000	3366000
331491G	33577	33577	3315117106	3321824	3321824	3315250YVY	3366002	3366002
331491G100	3357700	3357700	3315117111	3321827	3321827	3315280	33690	33690
331491W pt	33560	33560	3315117116	3321830	3321830	3315280116	3369085	3369085
331491W pt	33570 pt	33570 pt	3315117121	3321833	3321833	3315280201	3369011	3369011
331491WYVW pt	3356000	3356000	3315117126	3321836	3321836	3315280206	3369015	3369015
331491WYVW pt	3357000 pt	3357000 pt	3315117YVW	3321800	3321800	3315280211	3369023	3369023
331491WYVY pt	3356002	3356002	3315119	33219	33219	3315280221 pt	3369099 pt	3369099 pt
331491WYVY pt	3357002 pt	3357002 pt	3315119101	3321931	3321931	3315280221 pt	3369099	3369099
			3315119111	3321949	3321949	3315280YVW	3369000	3369000
			3315119116	3321998	3321998	3315280YVY	3369002	3369002
			3315119206	3321939	3321939			
			3315119YVW	3321900	3321900			



# Secondary Smelting and Alloying of Aluminum

# 1997

Issued November 1999

EC97M-3313C

## 1997 Economic Census

*Manufacturing*

Industry Series



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U.S. Department of Commerce  
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**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division



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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331314</b>	<b>Secondary smelting &amp; alloying of aluminum</b> .....	<b>84</b>	<b>108</b>	<b>6 698</b>	<b>228 586</b>	<b>5 098</b>	<b>11 041</b>	<b>151 274</b>	<b>802 757</b>	<b>2 830 853</b>	<b>3 632 154</b>	<b>90 264</b>
334110	Secondary nonferrous metals (pt) .....	N	98	6 210	209 611	4 753	10 325	140 642	738 881	2 721 141	3 459 599	75 492
339920	Primary metal products, n.e.c. (pt) .....	N	10	488	18 975	345	716	10 632	63 876	109 712	172 555	14 772

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331314, SECONDARY SMELTING &amp; ALLOYING OF ALUMINUM</b>												
<b>United States</b> .....	-	<b>108</b>	<b>89</b>	<b>6 698</b>	<b>228 586</b>	<b>5 098</b>	<b>11 041</b>	<b>151 274</b>	<b>802 757</b>	<b>2 830 853</b>	<b>3 632 154</b>	<b>90 264</b>
California .....	-	11	11	575	20 674	463	1 039	12 609	90 576	250 705	335 243	4 026
Indiana .....	-	12	9	830	32 265	591	1 414	18 600	105 778	271 410	379 265	11 607
Kentucky .....	-	4	4	343	12 113	240	514	7 818	43 585	392 555	436 725	7 557
Pennsylvania .....	-	9	7	260	8 309	192	392	5 487	41 114	125 266	164 503	15 411
Wisconsin .....	-	3	3	161	7 231	115	300	4 415	30 520	125 877	155 012	1 760

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.



**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331314, SECONDARY SMELTING &amp; ALLOYING OF ALUMINUM</b>		<b>331314, SECONDARY SMELTING &amp; ALLOYING OF ALUMINUM—Con.</b>	
Companies <sup>1</sup> .....	number.. 84	Value added .....	\$1,000.. 802 757
All establishments .....	number.. 108	Total inventories, beginning of year .....	\$1,000.. 256 071
Establishments with 1 to 19 employees .....	number.. 19	Finished goods inventories, beginning of year .....	\$1,000.. 106 789
Establishments with 20 to 99 employees .....	number.. 69	Work-in-process inventories, beginning of year .....	\$1,000.. 42 124
Establishments with 100 employees or more .....	number.. 20	Materials and supplies inventories, beginning of year .....	\$1,000.. 107 158
All employees .....	number.. 6 698	Total inventories, end of year .....	\$1,000.. 290 070
Total compensation <sup>2</sup> .....	\$1,000.. 293 295	Finished goods inventories, end of year .....	\$1,000.. 124 017
Annual payroll .....	\$1,000.. 228 586	Work-in-process inventories, end of year .....	\$1,000.. 26 352
Total fringe benefits .....	\$1,000.. 64 709	Materials and supplies inventories, end of year .....	\$1,000.. 139 701
Production workers, average for year .....	number.. 5 098	Gross book value of total assets at beginning of year .....	\$1,000.. 679 668
Production workers on March 12 .....	number.. 5 004	Total capital expenditures (new and used) .....	\$1,000.. 90 264
Production workers on May 12 .....	number.. 5 058	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 27 719
Production workers on August 12 .....	number.. 5 154	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 62 545
Production workers on November 12 .....	number.. 5 176	Total retirements <sup>2</sup> .....	\$1,000.. 18 499
Production-worker hours .....	1,000.. 11 041	Gross book value of total assets at end of year .....	\$1,000.. 751 433
Production-worker wages .....	\$1,000.. 151 274	Total depreciation during year <sup>2</sup> .....	\$1,000.. 53 286
Total cost of materials .....	\$1,000.. 2 830 853	Total rental payments <sup>2</sup> .....	\$1,000.. 11 151
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 2 644 152	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 2 730
Cost of resales .....	\$1,000.. 84 977	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 8 421
Cost of fuels .....	\$1,000.. 54 380	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 3 270
Cost of purchased electricity .....	\$1,000.. 34 279	Response coverage ratio <sup>4</sup> .....	percent.. 69
Cost of contract work .....	\$1,000.. 13 065	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 38 156
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 644 385	Response coverage ratio <sup>4</sup> .....	percent.. 69
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 1 417
Total value of shipments .....	\$1,000.. 3 632 154	Response coverage ratio <sup>4</sup> .....	percent.. 69
Primary products value of shipments .....	\$1,000.. 3 320 691	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 1 633
Secondary products value of shipments .....	\$1,000.. 111 047	Response coverage ratio <sup>4</sup> .....	percent.. 69
Total miscellaneous receipts .....	\$1,000.. 200 416	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 1 164
Value of resales .....	\$1,000.. 80 084	Response coverage ratio <sup>4</sup> .....	percent.. 69
Contract receipts .....	\$1,000.. 76 056	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 301
Other miscellaneous receipts .....	\$1,000.. 44 276	Response coverage ratio <sup>4</sup> .....	percent.. 69
Primary products specialization ratio .....	percent.. 96	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 763
Value of primary products shipments made in all industries .....	\$1,000.. 3 392 196	Response coverage ratio <sup>4</sup> .....	percent.. 69
Value of primary products shipments made in this industry .....	\$1,000.. 3 320 691	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 12 402
Value of primary products shipments made in other industries .....	\$1,000.. 71 505	Response coverage ratio <sup>4</sup> .....	percent.. 69
Coverage ratio .....	percent.. 97		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331314, SECONDARY SMELTING &amp; ALLOYING OF ALUMINUM</b>												
All establishments .....	-	108	89	6 698	228 586	5 098	11 041	151 274	802 757	2 830 853	3 632 154	90 264
Establishments with 1 to 4 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 5 to 9 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 10 to 19 employees .....	-	19	-	254	8 604	194	369	5 305	19 664	84 547	106 497	1 358
Establishments with 20 to 49 employees .....	-	39	39	1 240	43 733	903	1 926	27 293	174 601	465 800	635 992	26 203
Establishments with 50 to 99 employees .....	-	30	30	2 078	63 965	1 666	3 477	43 523	276 287	1 120 859	1 389 123	32 635
Establishments with 100 to 249 employees .....	-	18	18	D	D	D	D	D	D	D	D	D
Establishments with 250 to 499 employees .....	-	2	2	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 1,000 to 2,499 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	-	2	-	27	778	21	36	510	2 327	9 818	12 350	202

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331314</b>	<b>Secondary smelting &amp; alloying of aluminum .....</b>	<b>108</b>	<b>6 698</b>	<b>228 586</b>	<b>5 098</b>	<b>11 041</b>	<b>151 274</b>	<b>802 757</b>	<b>2 830 853</b>	<b>3 632 154</b>	<b>90 264</b>
3313141	Aluminum ingot, including pigs, sows, and molten metal, excluding billet, produced by secondary smelters .....	65	4 594	160 214	3 442	7 996	105 462	553 624	2 333 716	2 893 399	50 247
3313143	Aluminum extrusion ingot (billet), produced by secondary smelters .....	26	1 279	39 469	1 002	1 837	28 189	142 812	337 127	475 461	11 437
3313145	Aluminum and aluminum-base alloys powders, paste, and flakes .....	10	488	18 975	345	716	10 632	63 876	109 712	172 555	14 772

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331314</b>	<b>Secondary smelting and alloying of aluminum</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>3 392 196</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3313141	Aluminum ingot, including pigs, sows, and molten metal, excluding billet, produced by secondary smelters	N	X	X	2 680 354	N	X	X	1 979 860
33131411	Aluminum ingot, including pigs, sows, and molten metal, excluding billet, produced by secondary smelters	N	X	X	2 680 354	N	X	X	N
3313141100	Aluminum ingot, including pigs, sows, and molten metal, excluding billet, produced by secondary smelters \$ 1,000 s tons	51	D	P1 842.7	2 680 354	51	S	2 065.8	1 979 860
3313143	Aluminum extrusion ingot (billet), produced by secondary smelters	N	X	X	463 297	N	X	X	143 849
33131431	Aluminum extrusion ingot (billet), produced by secondary smelters	N	X	X	463 297	N	X	X	N
3313143100	Aluminum extrusion ingot (billet), produced by secondary smelters \$ 1,000 s tons	29	9453.5	S	463 297	11	S	S	143 849
3313145	Aluminum and aluminum-base alloys powders, paste, and flakes	N	X	X	194 538	N	X	X	N
33131451	Aluminum and aluminum-base alloys powders, paste, and flakes	N	X	X	194 538	N	X	X	N
3313145100	Aluminum and aluminum-base alloys powders, paste, and flakes mil lb	16	X	S	194 538	17	X	99.1	156 250
331314W	Secondary smelting and alloying of aluminum, nsk, total	N	X	X	54 007	N	X	X	N
331314WY	Secondary smelting and alloying of aluminum, nsk, total	N	X	X	54 007	N	X	X	N
331314WYWW	Secondary smelting and alloying of aluminum, nsk, for nonadministrative-record establishments	N	X	X	54 007	N	X	X	N
331314WYWY	Secondary smelting and alloying of aluminum, nsk, for administrative-record establishments	N	X	X	-	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; 9 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3313141</b>	<b>ALUMINUM INGOT, INCLUDING PIGS, SOWS, AND MOLTEN METAL, EXCLUDING BILLET, PRODUCED BY SECONDARY SMELTERS</b>		
	United States	<b>2 680 354</b>	<b>1 979 860</b>
	Arkansas	145 715	N
	California	199 243	117 520
	Illinois	94 439	110 977
	Indiana	326 385	202 598
	Ohio	150 753	136 501
	Pennsylvania	89 453	71 900
	Tennessee	277 934	134 891
	Wisconsin	147 738	97 472
<b>3313143</b>	<b>ALUMINUM EXTRUSION INGOT (BILLET), PRODUCED BY SECONDARY SMELTERS</b>		
	United States	<b>463 297</b>	<b>143 849</b>
	California	74 649	48 319
	Illinois	9 600	N
	Tennessee	56 388	N
	Texas	43 702	N
<b>3313145</b>	<b>ALUMINUM AND ALUMINUM-BASE ALLOYS POWDERS, PASTE, AND FLAKES</b>		
	United States	<b>194 538</b>	<b>N</b>

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331314</b>	<b>SECONDARY SMELTING &amp; ALLOYING OF ALUMINUM</b>				
33131209	Aluminum and aluminum-base alloy ingot ..... 1,000 s tons..	61 590.0	284 026	N	N
33100009	All other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	166 064	X	N
33141103	Refined unalloyed copper (cathodes, ingots, cakes, slabs, etc.) and blister or anode copper ..... 1,000 s tons..	-	-	N	N
33100015	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	N
33141929	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	N
21220015	Mining and all other nonferrous metal ores and concentrates .....	X	-	X	N
00190020	Aluminum and aluminum-base alloy scrap (excluding home scrap) ..... 1,000 s tons..	1 309.5	1 694 705	N	N
00190024	Copper and copper-base alloy scrap (except home scrap) .....	X	D	X	N
00190025	Lead and lead-base alloy scrap .....	X	D	X	N
00190026	Zinc and zinc-base alloy scrap (including drosses and skimmings) .....	X	D	X	N
00190052	All other nonferrous metal and metal-base alloy scrap .....	X	287 444	X	N
33131100	Alumina (gross weight) .....	-	-	N	N
00970099	All other materials and components, parts, containers, and supplies .....	X	174 272	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	-	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.



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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331314 SECONDARY SMELTING AND ALLOYING OF ALUMINUM**

This U.S. industry comprises establishments primarily engaged in (1) recovering aluminum and aluminum alloys from scrap and/or dross (i.e., secondary smelting) and making billet or ingot (except by rolling) and/or (2) manufacturing alloys, powder, paste, or flake from purchased aluminum.

The data published with NAICS code 331314 include the following SIC industries:

- 3341 Secondary nonferrous metals (pt)
- 3399 Primary metal products, n.e.c. (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic



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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F.

## Footnotes for Products Statistics and Materials Consumed by Kind

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### Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
\$ 3313141100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3313143100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

### Part 2. Materials Consumed by Kind (Table 7)

Not applicable.



1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3314219	33515	33515	3314921	33991 pt	33991 pt	331511A	33221	33221
3314219101	3351516	3351516	3314921101	3399166	3399166	331511A100	3322100	3322100
3314219211	3351536	3351536	3314921206	3399177	3399177	331511C	33222	33222
3314219306	3351518	3351518	3314921311	3399186	3399186	331511C300	3322200	3322200
3314219316	3351538	3351538	3314921416 pt	3399189 pt	3399187	331511E	33216	33216
3314219YVW	3351500	3351500	3314921416 pt	3399189 pt	3399188	331511E200	3321600	3321600
331421W	33510	33510	3314921426	3399191	3399191	331511W pt	33210	33210
331421WYWW	3351000	3351000	3314921431	3399198	3399198	331511W pt	33210	33210
331421WYWW	3351002	3351002	3314921YVW	3399100 pt	3399100 pt	331511W pt	33220	33220
3314221	33572	33572	3314923	33413	33413	331511WYWW pt	3321000	3321000
3314221101	3357211	3357211	3314923101	3341311	3341311	331511WYWW pt	3322000	3322000
3314221106	3357251	3357251	3314923206	3341321	3341321	331511WYWW pt	3321002	3321002
3314221211	3357271	3357271	3314923211	3341333	3341333	331511WYWW pt	3322002	3322002
3314221216	3357281	3357281	3314923216	3341351	3341351	3315120	33240	33240
3314221YVW	3357200	3357200	3314923221	3341399	3341399	3315120101	3324063	3324063
3314223	33574 pt	33575 pt	3314923YVW	3341300	3341300	3315120106	3324064	3324064
3314223300 pt	3357402	3357500 pt	3314927	33414	33414	3315120216	3324067	3324067
3314223300 pt	3357400 pt	3357500 pt	3314927101 pt	3341431 pt	3341405	3315120311	3324066	3324066
331422W	33570 pt	33570 pt	3314927101 pt	3341431 pt	3341434	3315120YWW	3324000	3324000
331422WYWW	3357000 pt	3357000 pt	3314927101 pt	3341431 pt	3341444	3315120YWW	3324002	3324002
331422WYWW	3357002 pt	3357002 pt	3314927206	3341411	3341411	3315131	33252	33252
3314230 pt	33410 pt	33410 pt	3314927YVW	3341400	3341400	3315131101	3325211	3325211
3314230 pt	33412	33412	3314929	33415	33415	3315131206	3325215	3325215
3314230 pt	33990 pt	33990 pt	3314929101	3341525	3341525	3315131211	3325219	3325219
3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315131YVW	3325200	3325200
3314230101	3341224	3341224	3314929211	3341545	3341545	3315133	33254	33254
3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133101	3325421	3325421
3314230206	3341226	3341226	331492A pt	33134 pt	33134 pt	3315133106	3325431	3325431
3314230311	3341231	3341231	331492A pt	33416	33416	3315133YVW	3325400	3325400
3314230YVW pt	3341000 pt	3341000 pt	331492A101 pt	3313417	3313415 pt	3315135	33255	33255
3314230YVW pt	3341200	3341200	331492A101 pt	3341633	3341633	3315135101	3325551	3325551
3314230YVW pt	3399000 pt	3399000 pt	331492A106	3341635	3341635	3315135106	3325555	3325555
3314230YVW pt	3399100 pt	3399100 pt	331492A111	3341671	3341671	3315135111	3325559	3325559
3314230YVW pt	3341002 pt	3341002 pt	331492A116	3341697	3341697	3315135YVW	3325500	3325500
3314230YVW pt	3399002 pt	3399002 pt	331492A206	3313488	3313489 pt	331513W	33250	33250
3314911	33561	33561	331492A311	3313499	3313498 pt	331513WYWW	3325000	3325000
3314911101	3356161	3356161	331492AYVW pt	3313400 pt	3313400 pt	331513WYVW	3325002	3325002
3314911106	3356164	3356164	331492AYVW pt	3341600	3341600	3315210	33630	33630
3314911111	3356165	3356165	331492W pt	33130 pt	33130 pt	3315210000	3363000 pt	3363000 pt
3314911116	3356166	3356166	331492W pt	33410 pt	33410 pt	3315210YVW	3363000 pt	3363000 pt
3314911YVW	3356100	3356100	331492WYWW pt	33990 pt	33990 pt	3315220	33640	33640
3314913	33562	33562	331492WYWW pt	3313000 pt	3313000 pt	3315220101	3364011	3364011
3314913101	3356272	3356272	331492WYWW pt	3341000 pt	3341000 pt	3315220206	3364021	3364021
3314913106	3356274	3356274	331492WYWW pt	3399000 pt	3399000 pt	3315220311	3364031	3364031
3314913111	3356279	3356279	331492WYVW pt	3313002 pt	3313002 pt	3315220416	3364041	3364041
3314913YVW	3356200	3356200	331492WYVW pt	3341002 pt	3341002 pt	3315220521	3364051	3364051
3314915	33573	33573	3315111	33211	33211	3315220YVW	3364000	3364000
3314915100	3357300	3357300	3315111106	3321123	3321123	3315220YVW	3364002	3364002
3314917	33574 pt	33575 pt	3315111111	3321125	3321125	3315240	33650	33650
3314917400 pt	3357405	3357500 pt	3315111116	3321126	3321126	3315240101	3365011	3365011
3314917400 pt	3357400 pt	3357500 pt	3315111201	3321121	3321121	3315240206	3365031	3365031
3314919	33563	33563	3315111YVW	3321100	3321100	3315240311	3365051	3365051
3314919101	3356381	3356381	3315113	33212	33212	3315240416	3365073	3365073
3314919106	3356383	3356383	3315113101	3321222	3321222	3315240421	3365061	3365061
3314919111	3356386	3356386	3315113206	3321224	3321224	3315240YVW	3365000	3365000
3314919116	3356391	3356391	3315113211	3321231	3321231	3315240YVW	3365002	3365002
3314919YVW	3356300	3356300	3315113216	3321233	3321233	3315250	33660	33660
331491C	33569	33569	3315113221	3321240	3321240	3315250101	3366020	3366020
331491C101	3356934	3356934	3315113YVW	3321200	3321200	3315250206	3366021	3366021
331491C106	3356951	3356951	3315115	33217	33217	3315250221	3366025	3366025
331491C111	3356957	3356957	331515101	3321731	3321731	3315250411	3366022	3366022
331491C121	3356994	3356994	331515106	3321733	3321733	3315250416	3366024	3366024
331491C126	3356996	3356996	331515111	3321735	3321735	3315250426	3366026	3366026
331491C131	3356997	3356997	331515116	3321736	3321736	3315250531	3366031	3366031
331491C216	3356993	3356993	3315151YVW	3321700	3321700	3315250536	3366041	3366041
331491CYVW	3356900	3356900	3315117	33218	33218	3315250541	3366051	3366051
331491E	33576	33576	3315117101	3321822	3321822	3315250546	3366061	3366061
331491E100	3357600	3357600	3315117106	3321824	3321824	3315250651	3366072	3366072
331491G	33577	33577	3315117111	3321827	3321827	3315250YVW	3366000	3366000
331491G100	3357700	3357700	3315117116	3321830	3321830	3315250YVW	3366002	3366002
331491W pt	33560	33560	3315117121	3321833	3321833	3315280	33690	33690
331491W pt	33570 pt	33570 pt	3315117126	3321836	3321836	3315280116	3369085	3369085
331491WYVW pt	3356000	3356000	3315117YVW	3321800	3321800	3315280201	3369011	3369011
331491WYVW pt	3357000 pt	3357000 pt	3315119	33219	33219	3315280206	3369015	3369015
331491WYVW pt	3356002	3356002	3315119101	3321931	3321931	3315280211	3369023	3369023
331491WYVW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099 pt
331491WYVW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099 pt
			3315119206	3321939	3321939	3315280YVW	3369000	3369000
			3315119YVW	3321900	3321900			



# Aluminum Sheet, Plate, and Foil Manufacturing

# 1997

Issued September 1999

EC97M-3313D

## 1997 Economic Census

*Manufacturing*

Industry Series



## U S C E N S U S B U R E A U

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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**

Under Secretary for  
Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331315</b>	<b>Aluminum sheet, plate, &amp; foil mfg</b>	<b>42</b>	<b>70</b>	<b>25 111</b>	<b>1 199 382</b>	<b>19 403</b>	<b>41 857</b>	<b>840 864</b>	<b>3 565 736</b>	<b>10 103 793</b>	<b>13 755 566</b>	<b>334 199</b>
335310	Aluminum sheet, plate, & foil (pt)	N	70	25 111	1 199 382	19 403	41 857	840 864	3 565 736	10 103 793	13 755 566	334 199

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.  
<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331315, ALUMINUM SHEET, PLATE, &amp; FOIL MFG</b>												
United States	-	70	59	25 111	1 199 382	19 403	41 857	840 864	3 565 736	10 103 793	13 755 566	334 199
California	-	8	5	450	19 963	338	749	12 324	43 263	103 979	154 240	3 464
Connecticut	-	4	4	350	17 988	234	542	8 929	30 245	67 715	98 113	2 839
Illinois	-	3	3	1 057	54 770	822	1 911	40 644	161 959	325 850	477 384	10 791
Indiana	-	3	3	1 949	103 893	1 528	3 157	72 983	430 813	939 702	1 337 629	37 943
Kentucky	-	6	4	2 282	108 775	1 600	4 120	67 095	266 591	679 406	953 408	19 726
Ohio	-	4	4	1 226	47 561	952	1 869	31 852	220 656	442 832	687 325	15 525
Tennessee	-	4	4	1 941	97 079	1 493	3 047	66 802	578 294	1 072 138	1 620 352	18 194

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331315, ALUMINUM SHEET, PLATE, &amp; FOIL MFG</b>		<b>331315, ALUMINUM SHEET, PLATE, &amp; FOIL MFG— Con.</b>	
Companies <sup>1</sup> .....	42	Value added .....	\$1,000.. 3 565 736
All establishments .....	70	Total inventories, beginning of year .....	\$1,000.. 1 841 005
Establishments with 1 to 19 employees .....	11	Finished goods inventories, beginning of year .....	\$1,000.. 418 722
Establishments with 20 to 99 employees .....	10	Work-in-process inventories, beginning of year .....	\$1,000.. 969 752
Establishments with 100 employees or more .....	49	Materials and supplies inventories, beginning of year .....	\$1,000.. 452 531
All employees .....	25 111	Total inventories, end of year .....	\$1,000.. 1 787 684
Total compensation <sup>2</sup> .....	1 600 838	Finished goods inventories, end of year .....	\$1,000.. 375 009
Annual payroll .....	1 199 382	Work-in-process inventories, end of year .....	\$1,000.. 927 428
Total fringe benefits .....	401 456	Materials and supplies inventories, end of year .....	\$1,000.. 485 247
Production workers, average for year .....	19 403	Gross book value of total assets at beginning of year .....	\$1,000.. 7 974 429
Production workers on March 12 .....	19 379	Total capital expenditures (new and used) .....	\$1,000.. 334 199
Production workers on May 12 .....	19 390	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 38 813
Production workers on August 12 .....	19 347	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 295 386
Production workers on November 12 .....	19 496	Total retirements <sup>2</sup> .....	\$1,000.. 176 543
Production-worker hours .....	41 857	Gross book value of total assets at end of year .....	\$1,000.. 8 132 085
Production-worker wages .....	\$1,000.. 840 864	Total depreciation during year <sup>2</sup> .....	\$1,000.. 388 541
Total cost of materials .....	\$1,000.. 10 103 793	Total rental payments <sup>2</sup> .....	\$1,000.. 21 490
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 9 294 658	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 4 617
Cost of resales .....	\$1,000.. 221 891	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 16 873
Cost of fuels .....	\$1,000.. 186 078	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 19 691
Cost of purchased electricity .....	\$1,000.. 192 478	Response coverage ratio <sup>4</sup> .....	percent.. 99
Cost of contract work .....	\$1,000.. 208 688	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 428 142
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 6 504 225	Response coverage ratio <sup>4</sup> .....	percent.. 99
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 7 666
Total value of shipments .....	\$1,000.. 13 755 566	Response coverage ratio <sup>4</sup> .....	percent.. 99
Primary products value of shipments .....	\$1,000.. 12 379 408	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 3 808
Secondary products value of shipments .....	\$1,000.. 883 264	Response coverage ratio <sup>4</sup> .....	percent.. 99
Total miscellaneous receipts .....	\$1,000.. 492 894	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 1 679
Value of resales .....	\$1,000.. 249 385	Response coverage ratio <sup>4</sup> .....	percent.. 99
Contract receipts .....	\$1,000.. 45 856	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 607
Other miscellaneous receipts .....	\$1,000.. 197 653	Response coverage ratio <sup>4</sup> .....	percent.. 99
Primary products specialization ratio .....	percent.. 93	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 8 546
Value of primary products shipments made in all industries .....	\$1,000.. 12 483 031	Response coverage ratio <sup>4</sup> .....	percent.. 99
Value of primary products shipments made in this industry .....	\$1,000.. 12 379 408	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 16 582
Value of primary products shipments made in other industries .....	\$1,000.. 103 623	Response coverage ratio <sup>4</sup> .....	percent.. 99
Coverage ratio .....	percent.. 99		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331315, ALUMINUM SHEET, PLATE, &amp; FOIL MFG</b>												
<b>All establishments .....</b>	-	<b>70</b>	<b>59</b>	<b>25 111</b>	<b>1 199 382</b>	<b>19 403</b>	<b>41 857</b>	<b>840 864</b>	<b>3 565 736</b>	<b>10 103 793</b>	<b>13 755 566</b>	<b>334 199</b>
Establishments with 1 to 4 employees .....	-	1	-	D	D	D	D	D	D	D	D	-
Establishments with 5 to 9 employees .....	-	4	-	29	1 092	23	41	757	3 769	11 827	15 762	346
Establishments with 10 to 19 employees .....	-	6	-	84	3 201	63	112	2 419	10 666	36 823	47 346	488
Establishments with 20 to 49 employees .....	-	5	5	162	8 320	80	264	4 491	10 878	50 532	62 958	909
Establishments with 50 to 99 employees .....	-	5	5	337	9 792	273	507	7 451	12 040	25 846	37 225	1 586
Establishments with 100 to 249 employees .....	-	24	24	4 002	161 349	3 026	6 378	102 696	628 093	2 041 817	2 665 328	34 549
Establishments with 250 to 499 employees .....	-	11	11	3 666	160 855	2 870	5 807	115 962	477 106	1 051 370	1 514 287	58 108
Establishments with 500 to 999 employees .....	-	6	6	4 345	209 258	3 373	8 062	147 680	396 426	1 995 658	2 403 645	45 458
Establishments with 1,000 to 2,499 employees .....	-	7	7	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	1	1	D	D	D	D	D	D	D	D	D
Administrative records <sup>2</sup> .....	-	9	-	115	3 041	70	114	2 109	9 909	32 788	43 160	964

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331315</b>	<b>Aluminum sheet, plate, &amp; foil mfg .....</b>	<b>70</b>	<b>25 111</b>	<b>1 199 382</b>	<b>19 403</b>	<b>41 857</b>	<b>840 864</b>	<b>3 565 736</b>	<b>10 103 793</b>	<b>13 755 566</b>	<b>334 199</b>
3313151	Aluminum plate (thickness of 0.25 in. or more), including continuous cast ..	10	1 067	59 950	808	2 103	42 823	111 989	206 315	309 104	8 121
3313153	Aluminum sheet and strip, including continuous cast .....	48	21 224	1 011 370	16 309	34 898	699 280	3 057 282	9 001 372	12 154 930	298 224
3313155	Plain aluminum foil (less than .006 in. thick) .....	12	2 820	128 062	2 286	4 856	98 761	396 465	896 106	1 291 532	27 854

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331315</b>	<b>Aluminum sheet, plate, and foil</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>12 483 031</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3313151	Aluminum plate (thickness of 0.25 in. or more), including continuous cast	N	X	X	923 131	N	X	X	579 832
33131511	Aluminum plate (thickness of 0.25 in. or more), including continuous cast	N	X	X	923 131	N	X	X	N
3313151101	Heat-treatable aluminum plate (thickness of 0.25 in. or more), including continuous cast	11	S	133.2	607 656	8	87.7	86.6	421 428
3313151106	Nonheat-treatable aluminum plate (thickness of 0.25 in. or more), including continuous cast	8		123.6	124.4	13	49.2	46.7	158 404
3313151Y	Aluminum plate (thickness of 0.25 in. or more), including continuous cast, nsk	N	X	X	-	N	X	X	N
3313151YWV	Aluminum plate (thickness of 0.25 in. or more), including continuous cast, nsk	N	X	X	-	N	X	X	-
3313153	Aluminum sheet and strip, including continuous cast	N	X	X	10 514 924	N	X	X	8 261 104
33131531	Flat aluminum sheet and strip, including continuous cast	N	X	X	829 245	N	X	X	N
3313153101	Flat, heat-treatable aluminum sheet and strip, including continuous cast	12	¶61.9	66.2	289 768	10	66.8	63.1	190 973
3313153106	Flat, nonheat-treatable, bare and precoated aluminum sheet and strip, including continuous cast	9	S	275.3	539 477	11	¶122.9	123.9	313 332
33131532	Coiled aluminum sheet and strip, including continuous cast	N	X	X	9 685 679	N	X	X	N
3313153211	Coiled, heat-treatable aluminum sheet and strip, including continuous cast	11	774.9	773.6	1 514 023	14	705.6	703.4	1 316 683
3313153216	Coiled, nonheat-treatable, bare aluminum sheet and strip, including continuous cast	20	¶3 132.0	2 826.5	5 814 280	23	4 709.1	2 419.4	4 552 283
3313153221	Coiled, nonheat-treatable, precoated, including only permanent finishes such as enameling and vinyl coatings aluminum sheet and strip, including continuous cast	18	¶1 041.7	¶1 061.0	2 357 376	19	¶754.2	781.8	1 887 833
3313153Y	Aluminum sheet and strip, including continuous cast, nsk	N	X	X	-	N	X	X	N
3313153YWV	Aluminum sheet and strip, including continuous cast, nsk	N	X	X	-	N	X	X	-
3313155	Plain aluminum foil (less than .006 in. thick)	N	X	X	1 044 976	N	X	X	D
33131551	Plain aluminum foil (less than .006 in. thick)	N	X	X	1 044 976	N	X	X	N
3313155100	Plain aluminum foil (less than .006 in. thick)	13	506.0	508.7	1 044 976	12	318.0	¶321.2	650 120
331315W	Aluminum sheet, plate, and foil, nsk, total	N	X	X	-	N	X	X	N
331315WY	Aluminum sheet, plate, and foil, nsk, total	N	X	X	-	N	X	X	N
331315WYWW	Aluminum sheet, plate, and foil, nsk, for nonadministrative-record establishments	N	X	X	-	N	X	X	N
331315WYWY	Aluminum sheet, plate, and foil, nsk, for administrative-record establishments	N	X	X	-	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: ¶ 10 to 19 percent estimated; ¶ 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3313151	<b>ALUMINUM PLATE (THICKNESS OF 0.25 IN. OR MORE), INCLUDING CONTINUOUS CAST</b>		
	<b>United States</b> .....	<b>923 131</b>	<b>579 832</b>
	California .....	41 078	65 687
3313153	<b>ALUMINUM SHEET AND STRIP, INCLUDING CONTINUOUS CAST</b>		
	<b>United States</b> .....	<b>10 514 924</b>	<b>8 261 104</b>
	Alabama .....	1 406 918	N
	Illinois .....	258 235	N
	Ohio .....	624 086	579 856
	West Virginia .....	747 354	N
3313155	<b>PLAIN ALUMINUM FOIL (LESS THAN .006 IN. THICK)</b>		
	<b>United States</b> .....	<b>1 044 976</b>	<b>D</b>
	Kentucky .....	48 478	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331315</b>	<b>ALUMINUM SHEET, PLATE, &amp; FOIL MFG</b>				
33131205	Unalloyed aluminum and aluminum-base alloy ingot, pig, and shot .....	1,000 s tons ..	2 040.3	2 861 158	N
33131207	Alloyed aluminum and aluminum-base alloy ingot, pig, and shot .....	1,000 s tons ..	1 489.7	1 566 026	N
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing .....	mil lb ..	2 154.9	1 590 141	N
33131600	Aluminum and aluminum-base alloy extruded shapes, including extruded rod, bar, pipe, tube, etc. ....	mil lb ..	D	D	N
33100011	All other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....		X	190 651	X
33141113	Copper and copper-base alloy ingot, ingot bar, and wire bar .....	1,000 s tons ..	1.9	4 234	N
33141111	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	1,000 s tons ..	0.4	681	N
33141935	Magnesium and magnesium-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	1,000 s tons ..	47.8	142 273	N
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	1,000 s tons ..	5.5	6 985	N
33149101	Titanium and titanium-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	1,000 s tons ..	1.2	4 167	N
33141921	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....		X	37 255	X
00190021	Aluminum and aluminum-base alloy scrap (except home scrap) from other establishments of your company .....	1,000 s tons ..	1 353.7	920 059	N
00190022	Aluminum and aluminum-base alloy scrap (except home scrap) from all other sources .....	1,000 s tons ..	629.3	661 748	N
00190024	Copper and copper-base alloy scrap (except home scrap) .....	1,000 s tons ..	D	D	N
00190080	Other nonferrous metal scrap (except home scrap) .....	1,000 s tons ..	D	D	N
00970099	All other materials and components, parts, containers, and supplies .....		X	1 065 912	X
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....		X	-	X

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive



stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331315 ALUMINUM SHEET, PLATE, AND FOIL MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in (1) flat rolling or continuous casting sheet, plate, foil and welded tube from purchased aluminum and/or (2) recovering aluminum from scrap and flat rolling or continuous casting sheet, plate, foil, and welded tube in integrated mills.

The data published with NAICS code 331315 include the following SIC industry:

3353 Aluminum sheet, plate, and foil (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.



The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## **DESCRIPTION OF THE ASM ESTIMATING PROCEDURE**

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.

# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33111111	33121 pt	33121 pt	3312223	33152 pt	33152 pt	3313161	33541	33541
3311111101	331215	3312111 pt	3312223101	3315251	3315201 pt	3313161101	3354115	3354115
3311111103	3312116	3312112 pt	3312223103	3315252	3315203 pt	3313161206	3354118	3354118
3311111105	3312153	3312151 pt	3312223105	3315253	3315205 pt	3313161311	3354125	3354125
3311111107	3312173	3312171 pt	3312223107	3315254	3315207 pt	3313161416	3354128	3354128
3311111109 pt	3312196 pt	3312131 pt	3312223109	3315255	3315209 pt	3313161YWV	3354100	3354100
3311111109 pt	3312196 pt	3312197 pt	3312223111 pt	3315214 pt	3315210 pt	3313163	33542	33542
3311111111	3312191	3312191	3312223111 pt	3315214 pt	3315213 pt	3313163101	3354261	3354261
3311111113	3312192	3312192	3312223113	3315256	3315216 pt	3313163106	3354263	3354263
3311111115 pt	3312195 pt	3312193	3312223122	3315257	3315222 pt	3313163YWV	3354200	3354200
3311111115 pt	3312195 pt	3312194	3312223124	3315258	3315223 pt	331316W	33540	33540
3311111117	3312198	3312198	3312223126	3315259	3315225 pt	331316WYWW	3354000	3354000
3311111YWV	3312100 pt	3312100 pt	3312223128	3315260	3315230 pt	331316WYWW	3354002	3354002
3311112	33991 pt	33991 pt	3312223YWV	3315200 pt	3315200 pt	3313191	33551	33551
3311112100 pt	3399100 pt	3399100 pt	3312225	33155	33155	3313191100	3355100	3355100
3311112100 pt	3399155	3399155	3312225100	3315500	3315500	3313193	33552	33552
33111113	33122	33122	3312227	33156	33156	3313193100 pt	3355200 pt	3355200
3311113100	3312200	3312200	3312227101	3315613	3315613	3313193100 pt	3355200 pt	3355222
3311115	33123	33123	3312227110	3315621	3315621	3313193100 pt	3355200 pt	3355225
3311115100	3312300	3312300	3312227112 pt	3315640 pt	3315635	3313197	33571	33571
3311117	33124	33124	3312227112 pt	3315640 pt	3315671	3313197100	3357100	3357100
3311117100	3312400	3312400	3312227YWV	3315600	3315600	3313199	33553	33553
3311119	33125	33125	3312229	33157	33157	3313199100	3355300	3355300
3311119100	3312500	3312500	3312229100	3315700	3315700	331319A	33574 pt	33575 pt
331111B	33126	33126	331222B	33159	33159	331319A100 pt	3357401	3357500 pt
331111B100	3312600	3312600	331222B110	3315951	3315951	331319A100 pt	3357400 pt	3357500 pt
331111D	33127	33127	331222B120	3315955	3315955	331319C	33554	33554
331111D100	3312700	3312700	331222B122	3315963	3315963	331319C100	3355400	3355400
331111F	33128	33128	331222B124	3315971	3315971	331319W pt	33550	33550
331111F100	3312800	3312800	331222B126 pt	3315998 pt	3315942	331319W pt	33570 pt	33570 pt
331111H	3312A	3312A	331222B126 pt	3315998 pt	3315973	331319WYWW pt	3355000	3355000
331111H101	3312A17	3312A17	331222B126 pt	3315998 pt	3315973	331319WYWW pt	3357000 pt	3357000 pt
331111H203	3312A26	3312A26	331222B126 pt	3315998 pt	3315973	331319WYWW pt	3355002	3355002
331111HYWV	3312A00	3312A00	331222B126 pt	3315998 pt	3315998	331319WYWW pt	3357002 pt	3357002 pt
331111J	3312B	3312B	331222BYWV	3315900	3315900	3314110 pt	33310	33310
331111J101	3312B62	3312B62	331222W	33150	33150	3314110 pt	33311	33311
331111J203	3312B66	3312B66	331222WYWW	3315000 pt	3315000 pt	3314110 pt	33312	33312
331111JYWV	3312B00	3312B00	331222WYWW	3315002 pt	3315002 pt	3314110101	3331100	3331100
331111L	3312C	3312C	3313110 pt	28190 pt	28190 pt	3314110106	3331217	3331217
331111L100	3312C00	3312C00	3313110 pt	28195	28195	3314110111	3331230	3331230
331111W pt	33120 pt	33120 pt	3313110100	2819500	2819500	3314110YWW pt	3331000	3331000
331111W pt	33990 pt	33990 pt	3313110YWW	2819000 pt	2819000 pt	3314110YWW pt	3331200	3331200
331111WYWW pt	3312000 pt	3312000 pt	3313110YWY	2819002 pt	2819002 pt	3314110YWY	3331002	3331002
331111WYWW pt	3399000 pt	3399000 pt	3313121	33347	33347	3314191	33391	33391
331111WYWW pt	3312002 pt	3312002 pt	3313121100	3334700	3334700	3314191100	3339100	3339100
331111WYWW pt	3399002 pt	3399002 pt	3313123	33348	33348	3314193	33392	33392
3311121	33132	33132	3313123100	3334800	3334800	3314193101 pt	3339231 pt	3339234
3311121100	3313200	3313200	331312W	33340	33340	3314193101 pt	3339231 pt	3339244
3311123	33133	33133	331312WYWW	3334000	3334000	3314193101 pt	3339231 pt	3339255
3311123100	3313300	3313300	331312WYWW	3334002	3334002	3314193111	3339251	3339251
3311125	33134 pt	33134 pt	3313141	33417	33417	3314193YWV	3339200	3339200
3311125101	3313416	3313415 pt	3313141100	3341700	3341700	3314197	33395	33395
3311125203 pt	3313487 pt	3313408	3313143	33418	33418	3314197101	3339525	3339525
3311125203 pt	3313487 pt	3313489 pt	3313143100	3341800	3341800	3314197206	3339535	3339535
3311125305	3313497	3313498 pt	3313145	33991 pt	33991 pt	3314197311	3339545	3339545
3311125YWV	3313400 pt	3313400 pt	3313145100	3399111	3399111	3314197YWV	3339500	3339500
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331222100YWY	3317002	3317000 pt	3313153221	3353233	3353233	3314213	33513	33513
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			331315WYWW	3353002 pt	3353002 pt	3314217YWV	3351400	3351400



1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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3314915100	3357300	3357300	3315111106	3321123	3321123	3315220YVW	3364002	3364002
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331491WYVW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099 pt
331491WYVW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099 pt
			3315119206	3321939	3321939	3315280YVW	3369000	3369000
			3315119YVW	3321900	3321900	3315280YVW	3369002	3369002



# Aluminum Extruded Product Manufacturing

## 1997

Issued October 1999

EC97M-3313E

### 1997 Economic Census

*Manufacturing*

Industry Series



U S C E N S U S B U R E A U

*Helping You Make Informed Decisions*

U.S. Department of Commerce  
Economics and Statistics Administration  
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*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**

Under Secretary for  
Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were



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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331316</b>	<b>Aluminum extruded product mfg</b>	<b>105</b>	<b>160</b>	<b>30 357</b>	<b>944 829</b>	<b>24 556</b>	<b>52 804</b>	<b>661 814</b>	<b>2 476 351</b>	<b>3 742 324</b>	<b>6 177 701</b>	<b>208 984</b>
335400	Aluminum extruded products ..	N	160	30 357	944 829	24 556	52 804	661 814	2 476 351	3 742 324	6 177 701	208 984

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331316, ALUMINUM EXTRUDED PRODUCT MFG</b>												
<b>United States .....</b>	-	<b>160</b>	<b>151</b>	<b>30 357</b>	<b>944 829</b>	<b>24 556</b>	<b>52 804</b>	<b>661 814</b>	<b>2 476 351</b>	<b>3 742 324</b>	<b>6 177 701</b>	<b>208 984</b>
California .....	-	22	17	2 351	74 272	1 953	4 589	51 947	189 069	290 940	476 404	19 621
Florida .....	-	7	7	1 820	45 538	1 514	3 127	33 139	137 852	180 906	316 118	30 408
Georgia .....	-	6	6	1 671	51 436	1 296	2 923	34 022	117 206	181 046	298 434	7 453
Illinois .....	-	5	5	1 306	42 138	1 071	2 390	30 983	92 978	115 712	207 483	4 384
Indiana .....	-	14	14	2 720	101 817	2 227	4 804	73 029	310 633	333 156	631 163	24 841
Michigan .....	-	10	9	1 446	51 381	1 068	2 193	31 636	99 703	137 026	236 108	16 873
Mississippi .....	-	4	4	922	27 544	741	1 571	20 707	46 341	93 561	141 254	8 717
New York .....	-	5	5	1 764	72 105	1 381	3 064	50 339	173 379	413 608	585 852	16 295
Ohio .....	-	18	18	2 473	68 466	1 936	3 931	44 082	181 811	270 849	449 663	9 919
Pennsylvania .....	-	6	6	1 702	55 137	1 464	3 047	41 944	213 702	305 686	516 472	9 493
Texas .....	-	8	7	1 416	40 831	1 180	3 075	29 760	73 302	152 502	225 520	4 151
Virginia .....	-	3	3	978	29 671	865	1 947	24 296	55 578	116 309	175 030	8 406

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331316, ALUMINUM EXTRUDED PRODUCT MFG</b>		<b>331316, ALUMINUM EXTRUDED PRODUCT MFG— Con.</b>	
Companies <sup>1</sup> .....	number.. 105	Value added .....	\$1,000.. 2 476 351
All establishments .....	number.. 160	Total inventories, beginning of year .....	\$1,000.. 537 741
Establishments with 1 to 19 employees .....	number.. 9	Finished goods inventories, beginning of year .....	\$1,000.. 132 459
Establishments with 20 to 99 employees .....	number.. 51	Work-in-process inventories, beginning of year .....	\$1,000.. 173 089
Establishments with 100 employees or more .....	number.. 100	Materials and supplies inventories, beginning of year .....	\$1,000.. 232 193
All employees .....	number.. 30 357	Total inventories, end of year .....	\$1,000.. 597 618
Total compensation <sup>2</sup> .....	\$1,000.. 1 221 182	Finished goods inventories, end of year .....	\$1,000.. 152 869
Annual payroll .....	\$1,000.. 944 829	Work-in-process inventories, end of year .....	\$1,000.. 193 653
Total fringe benefits .....	\$1,000.. 276 353	Materials and supplies inventories, end of year .....	\$1,000.. 251 096
Production workers, average for year .....	number.. 24 556	Gross book value of total assets at beginning of year .....	\$1,000.. 2 267 401
Production workers on March 12 .....	number.. 23 972	Total capital expenditures (new and used) .....	\$1,000.. 208 984
Production workers on May 12 .....	number.. 24 503	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 33 370
Production workers on August 12 .....	number.. 25 012	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 175 614
Production workers on November 12 .....	number.. 24 737	Total retirements <sup>2</sup> .....	\$1,000.. 36 444
Production-worker hours .....	\$1,000.. 52 804	Gross book value of total assets at end of year .....	\$1,000.. 2 439 941
Production-worker wages .....	\$1,000.. 661 814	Total depreciation during year <sup>2</sup> .....	\$1,000.. 155 619
Total cost of materials .....	\$1,000.. 3 742 324	Total rental payments <sup>2</sup> .....	\$1,000.. 41 069
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 3 492 111	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 12 533
Cost of resales .....	\$1,000.. 33 657	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 28 536
Cost of fuels .....	\$1,000.. 71 881	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 11 710
Cost of purchased electricity .....	\$1,000.. 82 329	Response coverage ratio <sup>4</sup> .....	percent.. 91
Cost of contract work .....	\$1,000.. 62 346	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 82 425
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 1 592 105	Response coverage ratio <sup>4</sup> .....	percent.. 91
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. 87 150	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 7 363
Total value of shipments .....	\$1,000.. 6 177 701	Response coverage ratio <sup>4</sup> .....	percent.. 91
Primary products value of shipments .....	\$1,000.. 5 662 921	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 5 654
Secondary products value of shipments .....	\$1,000.. 365 354	Response coverage ratio <sup>4</sup> .....	percent.. 91
Total miscellaneous receipts .....	\$1,000.. 149 426	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 2 436
Value of resales .....	\$1,000.. 33 784	Response coverage ratio <sup>4</sup> .....	percent.. 91
Contract receipts .....	\$1,000.. 12 864	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 3 206
Other miscellaneous receipts .....	\$1,000.. 102 778	Response coverage ratio <sup>4</sup> .....	percent.. 91
Primary products specialization ratio .....	percent.. 93	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 6 926
Value of primary products shipments made in all industries .....	\$1,000.. 5 976 360	Response coverage ratio <sup>4</sup> .....	percent.. 91
Value of primary products shipments made in this industry .....	\$1,000.. 5 662 921	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 7 820
Value of primary products shipments made in other industries .....	\$1,000.. 313 439	Response coverage ratio <sup>4</sup> .....	percent.. 91
Coverage ratio .....	percent.. 94		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331316, ALUMINUM EXTRUDED PRODUCT MFG</b>												
<b>All establishments .....</b>	-	<b>160</b>	<b>151</b>	<b>30 357</b>	<b>944 829</b>	<b>24 556</b>	<b>52 804</b>	<b>661 814</b>	<b>2 476 351</b>	<b>3 742 324</b>	<b>6 177 701</b>	<b>208 984</b>
Establishments with 1 to 4 employees .....	-	1	-	D	D	D	D	D	D	D	D	D
Establishments with 5 to 9 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 10 to 19 employees .....	-	8	-	114	3 539	94	210	2 385	7 746	15 379	23 049	406
Establishments with 20 to 49 employees .....	-	26	26	884	24 861	694	1 484	17 149	76 055	140 197	215 965	5 533
Establishments with 50 to 99 employees .....	-	25	25	1 728	47 598	1 351	2 723	30 514	152 345	215 676	367 436	7 676
Establishments with 100 to 249 employees .....	-	56	56	8 956	261 779	7 074	15 068	175 957	698 799	1 162 655	1 848 492	43 228
Establishments with 250 to 499 employees .....	-	36	36	12 342	363 862	10 144	22 130	264 822	850 215	1 228 744	2 069 552	84 142
Establishments with 500 to 999 employees .....	-	6	6	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	2	2	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	-	6	-	113	2 791	92	151	2 002	7 426	12 120	19 517	555

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331316</b>	<b>Aluminum extruded product mfg .....</b>	<b>160</b>	<b>30 357</b>	<b>944 829</b>	<b>24 556</b>	<b>52 804</b>	<b>661 814</b>	<b>2 476 351</b>	<b>3 742 324</b>	<b>6 177 701</b>	<b>208 984</b>
3313161	Extruded aluminum rod, bar, and other extruded shapes .....	138	26 380	826 155	21 289	45 329	577 822	2 106 896	3 385 065	5 451 859	166 056
3313163	Extruded and drawn aluminum tube ..	20	3 938	117 672	3 231	7 376	83 100	368 835	356 001	723 967	42 839



**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331316</b>	<b>Aluminum extruded products</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>5 976 360</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>3 758 158</b>
3313161	Extruded aluminum rod, bar, and other extruded shapes .....	N	X	X	5 140 725	N	X	X	2 973 466
33131611	Extruded aluminum rod and bar, alloys other than 2000 and 7000 series .....	N	X	X	812 931	N	X	X	N
3313161101	Extruded aluminum rod and bar, alloys other than 2000 and 7000 series ..1,000 s tons..	20	368.6	355.7	812 931	27	9243.6	9240.7	476 023
33131612	Extruded aluminum rod and bar, alloys in 2000 and 7000 series .....	N	X	X	378 792	N	X	X	N
3313161206	Extruded aluminum rod and bar, alloys in 2000 and 7000 series ..1,000 s tons..	10	147.8	145.6	378 792	9	997.2	95.1	187 882
33131613	Other extruded aluminum shapes (except tube), alloys other than 2000 and 7000 series .....	N	X	X	3 402 931	N	X	X	N
3313161311	Other extruded aluminum shapes (except tube), alloys other than 2000 and 7000 series ..1,000 s tons..	80	91 562.5	1 475.4	3 402 931	68	9996.4	9984.9	2 027 171
33131614	Other extruded aluminum shapes (except tube), alloys in 2000 and 7000 series .....	N	X	X	546 071	N	X	X	N
3313161416	Other extruded aluminum shapes (except tube), alloys in 2000 and 7000 series ..1,000 s tons..	24	9101.1	106.3	546 071	11	43.0	43.0	213 781
3313161Y	Extruded aluminum rod, bar, and other extruded shapes, nsk .....	N	X	X	-	N	X	X	N
3313161YWV	Extruded aluminum rod, bar, and other extruded shapes, nsk .....	N	X	X	-	N	X	X	68 609
3313163	Extruded and drawn aluminum tube .....	N	X	X	835 635	N	X	X	538 798
33131631	Extruded and drawn aluminum tube .....	N	X	X	835 635	N	X	X	N
3313163101	Extruded and drawn aluminum tube, alloys other than 2000 and 7000 series ..1,000 s tons..	25	172.0	9157.7	508 423	34	9157.1	154.6	409 251
3313163106	Extruded and drawn aluminum tube, alloys in 2000 and 7000 series ..1,000 s tons..	17	74.9	974.2	327 212	11	34.2	32.1	128 596
3313163Y	Extruded and drawn aluminum tube, nsk .....	N	X	X	-	N	X	X	N
3313163YWV	Extruded and drawn aluminum tube, nsk .....	N	X	X	-	N	X	X	951
331316W	Aluminum extruded products, nsk, total .....	N	X	X	-	N	X	X	245 894
331316WY	Aluminum extruded products, nsk, total .....	N	X	X	-	N	X	X	N
331316WYWW	Aluminum extruded products, nsk, for nonadministrative-record establishments .....	N	X	X	-	N	X	X	237 005
331316WYWY	Aluminum extruded products, nsk, for administrative-record establishments .....	N	X	X	-	N	X	X	8 889

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; 9 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)		
		1997	1992	
<b>3313161</b>	<b>EXTRUDED ALUMINUM ROD, BAR, AND OTHER EXTRUDED SHAPES</b>			
	<b>United States</b> .....	<b>5 140 725</b>	<b>2 973 466</b>	
	California .....	381 612	287 719	
	Florida .....	189 861	93 874	
	Georgia .....	311 968	224 174	
	Illinois .....	161 722	108 560	
	Indiana .....	513 349	304 593	
	Michigan .....	199 490	124 767	
	Mississippi .....	139 441	63 874	
	New York .....	366 829	152 375	
	Ohio .....	459 703	255 372	
	Pennsylvania .....	551 787	193 615	
	Tennessee .....	317 441	166 050	
	Texas .....	217 344	182 880	
	Utah .....	119 713	N	
	<b>3313163</b>	<b>EXTRUDED AND DRAWN ALUMINUM TUBE</b>		
		<b>United States</b> .....	<b>835 635</b>	<b>538 798</b>
Arizona .....		106 265	33 985	
California .....		63 977	29 627	
Indiana .....		73 113	N	
Michigan .....		32 150	N	
Ohio .....		30 089	17 018	
Virginia .....		94 666	N	

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331316</b>	<b>ALUMINUM EXTRUDED PRODUCT MFG</b>				
33131205	Unalloyed aluminum and aluminum-base alloy ingot, pig, and shot .....1,000 s tons..	558.1	820 314	313.0	389 399
33131207	Alloyed aluminum and aluminum-base alloy ingot, pig, and shot.....1,000 s tons..	908.8	1 276 928	P503.8	471 622
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing .....mil lb..	0.8	4 260	0.8	5 978
33131600	Aluminum and aluminum-base alloy extruded shapes, including extruded rod, bar, pipe, tube, etc. ....mil lb..	222.9	217 119	393.0	271 143
33100011	All other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	406 558	X	307 199
33141101	Copper and copper-base alloy cathodes .....1,000 s tons..	D	D	N	N
33141113	Copper and copper-base alloy ingot, ingot bar, and wire bar .....1,000 s tons..	D	D	N	N
33141111	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	2.9	4 826	0.5	897
33141935	Magnesium and magnesium-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	7.8	22 938	3.8	8 841
33141925	Nickel and nickel-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	D	D	D	D
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	D	D	D	D
33141945	Molybdenum and molybdenum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....mil lb..	-	-	N	N
33141949	Tin and tin-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....mil lb..	D	D	D	D
33149101	Titanium and titanium-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	0.8	2 584	0.7	2 338
33141903	Precious metals and precious metal alloy shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 troy ounces..	-	-	N	N
33142101	Brass shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	D	D	N	N
33141921	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	10 847	X	5 006
00190021	Aluminum and aluminum-base alloy scrap (except home scrap) from other establishments of your company .....1,000 s tons..	111.5	149 921	57.0	66 926
00190022	Aluminum and aluminum-base alloy scrap (except home scrap) from all other sources .....1,000 s tons..	226.1	232 486	P157.4	165 943
00190024	Copper and copper-base alloy scrap (except home scrap).....1,000 s tons..	1.9	8 413	D	D
00190080	Other nonferrous metal scrap (except home scrap) .....1,000 s tons..	D	D	D	D
00970099	All other materials and components, parts, containers, and supplies .....	X	275 064	X	289 734
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	-	X	135 741

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.



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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B. NAICS Codes, Titles, and Descriptions

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### **331316 ALUMINUM EXTRUDED PRODUCT MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in (1) extruding aluminum bar, pipe, and tube blooms or extruding or drawing tube from purchased aluminum; and/or (2) recovering aluminum from scrap and extruding bar, pipe, and tube blooms or drawing tube in integrated mills.

The data published with NAICS code 331316 include the following SIC industry:

3354 Aluminum extruded products

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.



# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.

# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33111111	33121 pt	33121 pt	3312223	33152 pt	33152 pt	3313161	33541	33541
3311111101	331215	331211 pt	3312223101	3315251	3315201 pt	3313161101	3354115	3354115
3311111103	3312116	3312112 pt	3312223103	3315252	3315203 pt	3313161206	3354118	3354118
3311111105	3312153	3312151 pt	3312223105	3315253	3315205 pt	3313161311	3354125	3354125
3311111107	3312173	3312171 pt	3312223107	3315254	3315207 pt	3313161416	3354128	3354128
3311111109 pt	3312196 pt	3312131 pt	3312223109	3315255	3315209 pt	3313161YWV	3354100	3354100
3311111109 pt	3312196 pt	3312197 pt	3312223111 pt	3315214 pt	3315210 pt	3313163	33542	33542
3311111111	3312191	3312191	3312223111 pt	3315214 pt	3315213 pt	3313163101	3354261	3354261
3311111113	3312192	3312192	3312223113	3315256	3315216 pt	3313163106	3354263	3354263
3311111115 pt	3312195 pt	3312193	3312223122	3315257	3315222 pt	3313163YVV	3354200	3354200
3311111115 pt	3312195 pt	3312194	3312223124	3315258	3315223 pt	331316W	33540	33540
3311111117	3312198	3312198	3312223126	3315259	3315225 pt	331316WYVV	3354000	3354000
3311111YWV	3312100 pt	3312100 pt	3312223128	3315260	3315230 pt	331316WYVY	3354002	3354002
3311112	33991 pt	33991 pt	3312223YVV	3315200 pt	3315200 pt	3313191	33551	33551
331112100 pt	3399100 pt	3399100 pt	3312225	33155	33155	3313191100	3355100	3355100
331112100 pt	3399155	3399155	3312225100	3315500	3315500	3313193	33552	33552
33111113	33122	33122	3312227	33156	33156	3313193100 pt	3355200 pt	3355200
3311113100	3312200	3312200	3312227101	3315613	3315613	3313193100 pt	3355200 pt	3355222
3311115	33123	33123	3312227110	3315621	3315621	3313193100 pt	3355200 pt	3355225
3311115100	3312300	3312300	3312227112 pt	3315640 pt	3315635	3313197	33571	33571
3311117	33124	33124	3312227112 pt	3315640 pt	3315671	3313197100	3357100	3357100
3311117100	3312400	3312400	3312227YVV	3315600	3315600	3313199	33553	33553
3311119	33125	33125	3312229	33157	33157	3313199100	3355300	3355300
331119100	3312500	3312500	3312229100	3315700	3315700	331319A	33574 pt	33575 pt
331111B	33126	33126	331222B	33159	33159	331319A100 pt	3357401	3357500 pt
331111B100	3312600	3312600	331222B110	3315951	3315951	331319A100 pt	3357400 pt	3357500 pt
331111D	33127	33127	331222B120	3315955	3315955	331319C	33554	33554
331111D100	3312700	3312700	331222B122	3315963	3315963	331319C100	3355400	3355400
331111F	33128	33128	331222B124	3315971	3315971	331319W pt	33550	33550
331111F100	3312800	3312800	331222B126 pt	3315998 pt	3315942	331319W pt	33570 pt	33570 pt
331111H	3312A	3312A	331222B126 pt	3315998 pt	3315973	331319WYVV pt	3355000	3355000
331111H101	3312A17	3312A17	331222B126 pt	3315998 pt	3315973	331319WYVV pt	3357000 pt	3357000 pt
331111H203	3312A26	3312A26	331222B126 pt	3315998 pt	3315973	331319WYVV pt	3355002	3355002
331111HYVV	3312A00	3312A00	331222B126 pt	3315998 pt	3315973	331319WYVV pt	3357002 pt	3357002 pt
331111J	3312B	3312B	331222BYVV	3315900	3315900	3314110 pt	33310	33310
331111J101	3312B62	3312B62	331222W	33150	33150	3314110 pt	33311	33311
331111J203	3312B66	3312B66	331222WYVV	3315000 pt	3315000 pt	3314110 pt	33312	33312
331111JYWV	3312B00	3312B00	331222WYVY	3315002 pt	3315002 pt	3314110101	3331100	3331100
331111L	3312C	3312C	3313110 pt	28190 pt	28190 pt	3314110106	3331217	3331217
331111L100	3312C00	3312C00	3313110 pt	28195	28195	3314110111	3331230	3331230
331111W pt	33120 pt	33120 pt	3313110100	2819500	2819500	3314110YVV pt	3331000	3331000
331111W pt	33990 pt	33990 pt	3313110YVV	2819000 pt	2819000 pt	3314110YVV pt	3331200	3331200
331111WYVV pt	3312000 pt	3312000 pt	3313110YVY	2819002 pt	2819002 pt	3314110YWV	3331002	3331002
331111WYVV pt	3399000 pt	3399000 pt	3313121	33347	33347	3314191	33391	33391
331111WYVY pt	3312002 pt	3312002 pt	3313121100	3334700	3334700	3314191100	3339100	3339100
331111WYVY pt	3399002 pt	3399002 pt	3313123	33348	33348	3314193	33392	33392
3311121	33132	33132	3313123100	3334800	3334800	3314193101 pt	3339231 pt	3339234
3311121100	3313200	3313200	331312W	33340	33340	3314193101 pt	3339231 pt	3339244
3311123	33133	33133	331312WYVV	3334000	3334000	3314193101 pt	3339231 pt	3339255
3311123100	3313300	3313300	331312WYVY	3334002	3334002	3314193111	3339251	3339251
3311125	33134 pt	33134 pt	3313141	33417	33417	3314193YVV	3339200	3339200
3311125101	3313416	3313415 pt	3313141100	3341700	3341700	3314197	33395	33395
3311125203 pt	3313487 pt	3313408	3313143	33418	33418	3314197101	3339525	3339525
3311125203 pt	3313487 pt	3313489 pt	3313143100	3341800	3341800	3314197206	3339535	3339535
3311125305	3313497	3313498 pt	3313145	33991 pt	33991 pt	3314197311	3339545	3339545
3311125YVV	3313400 pt	3313400 pt	3313145100	3399111	3399111	3314197YWV	3339500	3339500
331112W	33130 pt	33130 pt	331314W pt	33410 pt	33410 pt	3314199	33398	33398
331112WYVV	3313000 pt	3313000 pt	331314W pt	33990 pt	33990 pt	3314199101	3339805	3339805
331112WYVY	3313002 pt	3313002 pt	331314WYVV pt	3341000 pt	3341000 pt	3314199103	3339833	3339833
3312100	33170	33170	331314WYVV pt	3399000 pt	3399000 pt	3314199106 pt	3339851 pt	3339843
3312100100	3317000 pt	3317000 pt	331314WYVY pt	3341002 pt	3341002 pt	3314199106 pt	3339851 pt	3339863
3312100YVV	3317000 pt	3317000 pt	3313151	33531	33531	3314199121	3339873	3339873
3312100YVY	3317002	3317000 pt	3313151101	3353113	3353113	3314199126 pt	3339889 pt	3339871
3312211	33167	33167	3313151106	3353115	3353115	3314199126 pt	3339889 pt	3339889
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331221WYVV	3316000	3316000	3313153211	3353227	3353227	331419WYVY	3339002	3339002
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# Other Aluminum Rolling and Drawing

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



# U S C E N S U S B U R E A U

*Helping You Make Informed Decisions*

U.S. Department of Commerce  
Economics and Statistics Administration  
U.S. CENSUS BUREAU



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**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the



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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331319</b>	<b>Other aluminum rolling &amp; drawing</b> .....	<b>29</b>	<b>34</b>	<b>4 229</b>	<b>142 231</b>	<b>3 340</b>	<b>6 985</b>	<b>101 366</b>	<b>492 738</b>	<b>1 168 305</b>	<b>1 650 695</b>	<b>29 939</b>
335500	Aluminum rolling & drawing, n.e.c. ....	N	19	2 580	96 068	2 024	4 177	69 252	349 222	953 024	1 292 284	22 276
335710	Nonferrous wire drawing & insulating (pt) .....	N	15	1 649	46 163	1 316	2 808	32 114	143 516	215 281	358 411	7 663

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331319, OTHER ALUMINUM ROLLING &amp; DRAWING</b>												
United States .....	-	34	30	4 229	142 231	3 340	6 985	101 366	492 738	1 168 305	1 650 695	29 939

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331319, OTHER ALUMINUM ROLLING &amp; DRAWING</b>		<b>331319, OTHER ALUMINUM ROLLING &amp; DRAWING</b>	
— Con.		— Con.	
Companies <sup>1</sup> .....	number.. 29	Value added .....	\$1,000.. 492 738
All establishments .....	number.. 34	Total inventories, beginning of year .....	\$1,000.. 136 899
Establishments with 1 to 19 employees .....	number.. 4	Finished goods inventories, beginning of year .....	\$1,000.. 45 575
Establishments with 20 to 99 employees .....	number.. 15	Work-in-process inventories, beginning of year .....	\$1,000.. 36 287
Establishments with 100 employees or more .....	number.. 15	Materials and supplies inventories, beginning of year .....	\$1,000.. 55 037
All employees .....	number.. 4 229	Total inventories, end of year .....	\$1,000.. 153 443
Total compensation <sup>2</sup> .....	\$1,000.. 184 578	Finished goods inventories, end of year .....	\$1,000.. 61 908
Annual payroll .....	\$1,000.. 142 231	Work-in-process inventories, end of year .....	\$1,000.. 30 302
Total fringe benefits .....	\$1,000.. 42 347	Materials and supplies inventories, end of year .....	\$1,000.. 61 233
Production workers, average for year .....	number.. 3 340	Gross book value of total assets at beginning of year .....	\$1,000.. 340 619
Production workers on March 12 .....	number.. 3 319	Total capital expenditures (new and used) .....	\$1,000.. 29 939
Production workers on May 12 .....	number.. 3 366	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 6 406
Production workers on August 12 .....	number.. 3 351	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 23 533
Production workers on November 12 .....	number.. 3 324	Total retirements <sup>2</sup> .....	\$1,000.. 9 325
Production-worker hours .....	1,000.. 6 985	Gross book value of total assets at end of year .....	\$1,000.. 361 233
Production-worker wages .....	\$1,000.. 101 366	Total depreciation during year <sup>2</sup> .....	\$1,000.. 18 491
Total cost of materials .....	\$1,000.. 1 168 305	Total rental payments <sup>2</sup> .....	\$1,000.. 4 283
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 1 093 257	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 1 784
Cost of resales .....	\$1,000.. 16 831	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 2 499
Cost of fuels .....	\$1,000.. 11 746	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 2 262
Cost of purchased electricity .....	\$1,000.. 41 235	Response coverage ratio <sup>4</sup> .....	percent.. 81
Cost of contract work .....	\$1,000.. 5 236	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 12 852
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 975 490	Response coverage ratio <sup>4</sup> .....	percent.. 81
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 644
Total value of shipments .....	\$1,000.. 1 650 695	Response coverage ratio <sup>4</sup> .....	percent.. 81
Primary products value of shipments .....	\$1,000.. 1 308 397	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 218
Secondary products value of shipments .....	\$1,000.. 291 059	Response coverage ratio <sup>4</sup> .....	percent.. 81
Total miscellaneous receipts .....	\$1,000.. 51 239	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 17
Value of resales .....	\$1,000.. 20 455	Response coverage ratio <sup>4</sup> .....	percent.. 81
Contract receipts .....	\$1,000.. 17 913	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 10
Other miscellaneous receipts .....	\$1,000.. 12 871	Response coverage ratio <sup>4</sup> .....	percent.. 81
Primary products specialization ratio .....	percent.. 81	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 419
Value of primary products shipments made in all industries .....	\$1,000.. 2 066 454	Response coverage ratio <sup>4</sup> .....	percent.. 81
Value of primary products shipments made in this industry .....	\$1,000.. 1 308 397	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 1 201
Value of primary products shipments made in other industries .....	\$1,000.. 758 057	Response coverage ratio <sup>4</sup> .....	percent.. 81
Coverage ratio .....	percent.. 63		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331319, OTHER ALUMINUM ROLLING &amp; DRAWING</b>												
<b>All establishments .....</b>	-	<b>34</b>	<b>30</b>	<b>4 229</b>	<b>142 231</b>	<b>3 340</b>	<b>6 985</b>	<b>101 366</b>	<b>492 738</b>	<b>1 168 305</b>	<b>1 650 695</b>	<b>29 939</b>
Establishments with 1 to 4 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 5 to 9 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 10 to 19 employees .....	-	4	-	63	1 610	47	85	991	3 993	3 836	7 915	191
Establishments with 20 to 49 employees .....	-	6	6	229	7 728	178	316	5 341	30 212	54 011	83 357	1 307
Establishments with 50 to 99 employees .....	-	9	9	605	18 653	491	973	14 014	92 462	205 777	300 798	4 505
Establishments with 100 to 249 employees .....	-	8	8	1 340	43 288	1 014	1 994	28 437	144 879	475 827	608 233	14 610
Establishments with 250 to 499 employees .....	1	7	7	1 992	70 952	1 610	3 617	52 583	221 192	428 854	650 392	9 326
Establishments with 500 to 999 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 1,000 to 2,499 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	-	-	-	-	-	-	-	-	-	-	-	-

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331319</b>	<b>Other aluminum rolling &amp; drawing .....</b>	<b>34</b>	<b>4 229</b>	<b>142 231</b>	<b>3 340</b>	<b>6 985</b>	<b>101 366</b>	<b>492 738</b>	<b>1 168 305</b>	<b>1 650 695</b>	<b>29 939</b>
3313191	Aluminum and aluminum-base alloy wire and cable (except covered or insulated), including ACSR, produced in aluminum rolling mills ..	5	D	D	D	D	D	D	D	D	D
3313193	Rolled aluminum rod, bar, including continuous cast .....	5	894	39 194	741	1 613	31 417	141 880	489 917	625 348	8 717
3313197	Aluminum and aluminum-base alloy wire and cable (except covered or insulated), including ACSR, made in nonferrous plants that draw wire .....	14	1 529	43 596	1 218	2 593	30 242	139 104	209 915	348 513	6 463
3313199	Aluminum ingot, excluding billet, produced in aluminum rolling mills ..	1	D	D	D	D	D	D	D	D	D
331319A	Aluminum wire cloth and woven wire products, made in nonferrous plants that draw wire .....	1	D	D	D	D	D	D	D	D	D
331319C	Aluminum extrusion ingot (billet), produced in aluminum rolling mills ..	8	1 359	47 671	1 026	2 150	31 203	169 588	409 663	574 406	12 502

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331319</b>	<b>Other aluminum rolling and drawing, nec</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>2 066 454</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3313191	Aluminum and aluminum-base alloy wire and cable (except covered or insulated), including ACSR, produced in aluminum rolling mills	N	X	X	175 955	N	X	X	D
33131911	Aluminum and aluminum-base alloy wire and cable (except covered or insulated), including ACSR, produced in aluminum rolling mills	N	X	X	175 955	N	X	X	N
3313191100	Aluminum and aluminum-base alloy wire and cable (except covered or insulated), including ACSR, produced in aluminum rolling mills \$	13	X	X	175 955	5	X	X	D
3313193	Rolled aluminum rod, bar, including continuous cast	N	X	X	422 473	N	X	X	D
33131931	Rolled aluminum rod, bar, including continuous cast	N	X	X	422 473	N	X	X	N
3313193100	Rolled aluminum rod, bar, including continuous cast . . . . . 1,000 s tons . . . . .	8	P262.5	238.8	422 473	N	N	N	N
3313197	Aluminum and aluminum-base alloy wire and cable (except covered or insulated), including ACSR, made in nonferrous plants that draw wire	N	X	X	507 014	N	X	X	383 720
33131971	Aluminum and aluminum-base alloy wire and cable (except covered or insulated), including ACSR, made in nonferrous plants that draw wire	N	X	X	507 014	N	X	X	N
3313197100	Aluminum and aluminum-base alloy wire and cable (except covered or insulated), including ACSR, made in nonferrous plants that draw wire \$	24	X	X	507 014	21	X	X	383 720
3313199	Aluminum ingot, excluding billet, produced in aluminum rolling mills	N	X	X	D	N	X	X	413 154
33131991	Aluminum ingot, excluding billet, produced in aluminum rolling mills	N	X	X	D	N	X	X	N
3313199100	Aluminum ingot, excluding billet, produced in aluminum rolling mills \$	7	X	X	D	10	X	X	413 154
331319A	Aluminum wire cloth and woven wire products, made in nonferrous plants that draw wire	N	X	X	D	N	X	X	N
331319A1	Aluminum wire cloth and woven wire products, made in nonferrous plants that draw wire	N	X	X	D	N	X	X	N
331319A100	Aluminum wire cloth and woven wire products, made in nonferrous plants that draw wire \$	1	X	X	D	N	X	X	N
331319C	Aluminum extrusion ingot (billet), produced in aluminum rolling mills	N	X	X	527 490	N	X	X	152 366
331319C1	Aluminum extrusion ingot (billet), produced in aluminum rolling mills	N	X	X	527 490	N	X	X	N
331319C100	Aluminum extrusion ingot (billet), produced in aluminum rolling mills \$ . . . . . 1,000 s tons . . . . .	15	P411.4	P412.8	527 490	13	P296.6	187.8	152 366
331319W	Other aluminum rolling and drawing, nec, nsk, total	N	X	X	-	N	X	X	N
331319WY	Other aluminum rolling and drawing, nec, total	N	X	X	-	N	X	X	N
331319WYWW	Other aluminum rolling and drawing, nec, nsk, for nonadministrative-record establishments	N	X	X	-	N	X	X	N
331319WYWY	Other aluminum rolling and drawing, nec, nsk, for administrative-record establishments	N	X	X	-	N	X	X	N

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3313191	<b>ALUMINUM AND ALUMINUM-BASE ALLOY WIRE AND CABLE (EXCEPT COVERED OR INSULATED), INCLUDING ACSR, PRODUCED IN ALUMINUM ROLLING MILLS</b> United States .....	175 955	D
3313193	<b>ROLLED ALUMINUM ROD, BAR, INCLUDING CONTINUOUS CAST</b> United States .....	422 473	D
3313197	<b>ALUMINUM AND ALUMINUM-BASE ALLOY WIRE AND CABLE (EXCEPT COVERED OR INSULATED), INCLUDING ACSR, MADE IN NONFERROUS PLANTS THAT DRAW WIRE</b> United States ..... Alabama .....	507 014 66 797	383 720 N
3313199	<b>ALUMINUM INGOT, EXCLUDING BILLET, PRODUCED IN ALUMINUM ROLLING MILLS</b> United States .....	D	413 154
331319A	<b>ALUMINUM WIRE CLOTH AND WOVEN WIRE PRODUCTS, MADE IN NONFERROUS PLANTS THAT DRAW WIRE</b> United States .....	D	N
331319C	<b>ALUMINUM EXTRUSION INGOT (BILLET), PRODUCED IN ALUMINUM ROLLING MILLS</b> United States .....	527 490	152 366

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331319</b>	<b>OTHER ALUMINUM ROLLING &amp; DRAWING</b>				
33131205	Unalloyed aluminum and aluminum-base alloy ingot, pig, and shot ..... 1,000 s tons..	139.3	217 042	D	D
33131207	Alloyed aluminum and aluminum-base alloy ingot, pig, and shot..... 1,000 s tons..	32.7	68 978	7.5	9 445
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing ..... mil lb..	D	D	D	D
33131600	Aluminum and aluminum-base alloy extruded shapes, including extruded rod, bar, pipe, tube, etc. .... mil lb..	P212.3	184 664	D	D
33100011	All other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	242 366	X	D
33141101	Copper and copper-base alloy cathodes ..... 1,000 s tons..	D	D	N	X
33141113	Copper and copper-base alloy ingot, ingot bar, and wire bar ..... 1,000 s tons..	D	D	N	X
33141111	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) ..... 1,000 s tons..	P1.2	2 454	D	D
33141935	Magnesium and magnesium-base alloy shapes and forms (except castings, forgings, and fabricated metal products) ..... 1,000 s tons..	1.3	3 878	1.2	3 213
33141925	Nickel and nickel-base alloy shapes and forms (except castings, forgings, and fabricated metal products) ..... 1,000 s tons..	D	D	D	D
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products) ..... 1,000 s tons..	D	D	D	D
33149101	Titanium and titanium-base alloy shapes and forms (except castings, forgings, and fabricated metal products) ..... 1,000 s tons..	D	D	D	D
33141921	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	9 047	X	7 710
00190021	Aluminum and aluminum-base alloy scrap (except home scrap) from other establishments of your company ..... 1,000 s tons..	D	D	23.0	23 139
00190022	Aluminum and aluminum-base alloy scrap (except home scrap) from all other sources ..... 1,000 s tons..	D	D	D	D
00190080	Other nonferrous metal scrap (except home scrap) ..... 1,000 s tons..	-	-	D	D
00970099	All other materials and components, parts, containers, and supplies .....	X	70 661	X	11
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	-	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It



includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331319 OTHER ALUMINUM ROLLING AND DRAWING**

This U.S. Industry comprises establishments primarily engaged in (1) rolling, drawing, or extruding shapes (except flat rolled sheet, plate, foil, and welded tube; extruded rod, bar, pipe, and tube blooms; and drawn or extruded tube) from purchased aluminum and/or (2) recovering aluminum from scrap and rolling, drawing or

extruding shapes (except flat rolled sheet, plate, foil, and welded tube; extruded rod, bar, pipe, and tube blooms; and drawn or extruded tube) in integrated mills.

The data published with NAICS code 331319 include the following SIC industries:

3355 Aluminum rolling and drawing, n.e.c.

3357 Nonferrous wire drawing and insulating (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.



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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F.

## Footnotes for Products Statistics and Materials Consumed by Kind

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### Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
\$ 3313191100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3313197100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3313199100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331319A100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331319C100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

### Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33111111	33121 pt	33121 pt	3312223	33152 pt	33152 pt	3313161	33541	33541
3311111101	331215	331211 pt	3312223101	3315251	3315201 pt	3313161101	3354115	3354115
3311111103	3312116	3312112 pt	3312223103	3315252	3315203 pt	3313161206	3354118	3354118
3311111105	3312153	3312151 pt	3312223105	3315253	3315205 pt	3313161311	3354125	3354125
3311111107	3312173	3312171 pt	3312223107	3315254	3315207 pt	3313161416	3354128	3354128
3311111109 pt	3312196 pt	3312131 pt	3312223109	3315255	3315209 pt	3313161YVW	3354100	3354100
3311111109 pt	3312196 pt	3312197 pt	3312223111 pt	3315214 pt	3315210 pt	3313163	33542	33542
3311111111	3312191	3312191	3312223111 pt	3315214 pt	3315213 pt	3313163101	3354261	3354261
3311111113	3312192	3312192	3312223113	3315256	3315216 pt	3313163106	3354263	3354263
3311111115 pt	3312195 pt	3312193	3312223122	3315257	3315222 pt	3313163YVW	3354200	3354200
3311111115 pt	3312195 pt	3312194	3312223124	3315258	3315223 pt	331316W	33540	33540
3311111117	3312198	3312198	3312223126	3315259	3315225 pt	331316WYVW	3354000	3354000
3311111YVW	3312100 pt	3312100 pt	3312223128	3315260	3315230 pt	331316WYVW	3354002	3354002
3311112	33991 pt	33991 pt	3312223YVW	3315200 pt	3315200 pt	3313191	33551	33551
3311112100 pt	3399100 pt	3399100 pt	3312225	33155	33155	3313191100	3355100	3355100
3311112100 pt	3399155	3399155	3312225100	3315500	3315500	3313193	33552	33552
33111113	33122	33122	3312227	33156	33156	3313193100 pt	3355200 pt	3355200
3311113100	3312200	3312200	3312227101	3315613	3315613	3313193100 pt	3355200 pt	3355222
3311115	33123	33123	3312227110	3315621	3315621	3313193100 pt	3355200 pt	3355225
3311115100	3312300	3312300	3312227112 pt	3315640 pt	3315635	3313197	33571	33571
3311117	33124	33124	3312227112 pt	3315640 pt	3315671	3313197100	3357100	3357100
3311117100	3312400	3312400	3312227YVW	3315600	3315600	3313199	33553	33553
3311119	33125	33125	3312229	33157	33157	3313199100	3355300	3355300
3311119100	3312500	3312500	3312229100	3315700	3315700	331319A	33574 pt	33575 pt
331111B	33126	33126	331222B	33159	33159	331319A100 pt	3357401	3357500 pt
331111B100	3312600	3312600	331222B110	3315951	3315951	331319A100 pt	3357400 pt	3357500 pt
331111D	33127	33127	331222B120	3315955	3315955	331319C	33554	33554
331111D100	3312700	3312700	331222B122	3315963	3315963	331319C100	3355400	3355400
331111F	33128	33128	331222B124	3315971	3315971	331319W pt	33550	33550
331111F100	3312800	3312800	331222B126 pt	3315998 pt	3315942	331319W pt	33570 pt	33570 pt
331111H	3312A	3312A	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3355000	3355000
331111H101	3312A17	3312A17	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3357000 pt	3357000 pt
331111H203	3312A26	3312A26	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3355002	3355002
331111HYVW	3312A00	3312A00	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3357002 pt	3357002 pt
331111J	3312B	3312B	331222B126 pt	3315998 pt	3315973	3314110 pt	33310	33310
331111J101	3312B62	3312B62	331222B126 pt	3315998 pt	3315973	3314110 pt	33311	33311
331111J203	3312B66	3312B66	331222B126 pt	3315998 pt	3315973	3314110101	3331100	3331100
331111JYVW	3312B00	3312B00	331222B126 pt	3315998 pt	3315973	3314110106	3331217	3331217
331111L	3312C	3312C	331222B126 pt	3315998 pt	3315973	3314110111	3331230	3331230
331111L100	3312C00	3312C00	331222B126 pt	3315998 pt	3315973	3314110YVW pt	3331000	3331000
331111W pt	33120 pt	33120 pt	331222B126 pt	3315998 pt	3315973	3314110YVW pt	3331200	3331200
331111W pt	33990 pt	33990 pt	331222B126 pt	3315998 pt	3315973	3314110YVW pt	3331002	3331002
331111WYVW pt	3312000 pt	3312000 pt	331222B126 pt	3315998 pt	3315973	3314191	33391	33391
331111WYVW pt	3399000 pt	3399000 pt	331222B126 pt	3315998 pt	3315973	3314191100	3339100	3339100
331111WYVW pt	3312002 pt	3312002 pt	331222B126 pt	3315998 pt	3315973	3314193	33392	33392
331111WYVW pt	3399002 pt	3399002 pt	331222B126 pt	3315998 pt	3315973	3314193101 pt	3339231 pt	3339234
3311121	33132	33132	331222B126 pt	3315998 pt	3315973	3314193101 pt	3339231 pt	3339244
3311121100	3313200	3313200	331222B126 pt	3315998 pt	3315973	3314193101 pt	3339231 pt	3339255
3311123	33133	33133	331222B126 pt	3315998 pt	3315973	3314193111	3339251	3339251
3311123100	3313300	3313300	331222B126 pt	3315998 pt	3315973	3314193YVW	3339200	3339200
3311125	33134 pt	33134 pt	331222B126 pt	3315998 pt	3315973	3314197	33395	33395
3311125101	3313416	3313415 pt	331222B126 pt	3315998 pt	3315973	3314197101	3339525	3339525
3311125203 pt	3313487 pt	3313408	331222B126 pt	3315998 pt	3315973	3314197206	3339535	3339535
3311125203 pt	3313487 pt	3313489 pt	331222B126 pt	3315998 pt	3315973	3314197311	3339545	3339545
3311125305	3313497	3313498 pt	331222B126 pt	3315998 pt	3315973	3314197YVW	3339500	3339500
3311125YVW	3313400 pt	3313400 pt	331222B126 pt	3315998 pt	3315973	3314199	33398	33398
331112W	33130 pt	33130 pt	331222B126 pt	3315998 pt	3315973	3314199101	3339805	3339805
331112WYVW	3313000 pt	3313000 pt	331222B126 pt	3315998 pt	3315973	3314199103	3339833	3339833
331112WYVW	3313002 pt	3313002 pt	331222B126 pt	3315998 pt	3315973	3314199106 pt	3339851 pt	3339843
3312100	33170	33170	331222B126 pt	3315998 pt	3315973	3314199106 pt	3339851 pt	3339863
3312100100	3317000 pt	3317000 pt	331222B126 pt	3315998 pt	3315973	3314199121	3339873	3339873
3312100YVW	3317000 pt	3317000 pt	331222B126 pt	3315998 pt	3315973	3314199126 pt	3339889 pt	3339889
3312100YVW	3317002	3317000 pt	331222B126 pt	3315998 pt	3315973	3314199126 pt	3339889 pt	3339889
3312100YVW	3317002	3317000 pt	331222B126 pt	3315998 pt	3315973	3314199131	3339899	3339899
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3312221214	3315125	3315125	331222B126 pt	3315998 pt	3315973	3314213206	3351332	3351332
3312221222	3315134	3315134	331222B126 pt	3315998 pt	3315973	3314213YVW	3351300	3351300
3312221YVW	3315100	3315100	331222B126 pt	3315998 pt	3315973	3314217	33514	33514
3312221	33151	33151	331222B126 pt	3315998 pt	3315973	3314217101	3351413	3351413
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3312221112	3315115	3315115	331222B126 pt	3315998 pt	3315973	3314217YVW	3351400	3351400
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			331315WYVW	3353002 pt	3353002 pt			

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133106	3325431	3325431
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331491WYVW pt	3356002	3356002	3315119101	3321931	3321931	3315280221 pt	3369099 pt	3369099 pt
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331491WYVW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280YVW	3369002	3369002
			3315119206	3321939	3321939			
			3315119YVW	3321900	3321900			





# Primary Smelting and Refining of Copper

1997

Issued December 1999

EC97M-3314A

## 1997 Economic Census

*Manufacturing*

Industry Series



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Economics and Statistics Administration  
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## 1997 Economic Census

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Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for  
Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.



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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331411</b>	<b>Primary smelting &amp; refining of copper</b> .....	9	16	7 360	287 382	5 721	12 640	218 511	1 074 665	5 459 268	6 540 441	184 604
333100	Primary copper .....	N	16	7 360	287 382	5 721	12 640	218 511	1 074 665	5 459 268	6 540 441	184 604

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.  
<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331411, PRIMARY SMELTING &amp; REFINING OF COPPER</b>												
United States .....	1	16	15	7 360	287 382	5 721	12 640	218 511	1 074 665	5 459 268	6 540 441	184 604

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331411, PRIMARY SMELTING &amp; REFINING OF COPPER</b>		<b>331411, PRIMARY SMELTING &amp; REFINING OF COPPER—Con.</b>	
Companies <sup>1</sup> .....	number.. 9	Value added .....	\$1,000.. 1 074 665
All establishments .....	number.. 16	Total inventories, beginning of year .....	\$1,000.. 614 213
Establishments with 1 to 19 employees .....	number.. 1	Finished goods inventories, beginning of year .....	\$1,000.. 102 979
Establishments with 20 to 99 employees .....	number.. 1	Work-in-process inventories, beginning of year .....	\$1,000.. 422 516
Establishments with 100 employees or more .....	number.. 14	Materials and supplies inventories, beginning of year .....	\$1,000.. 88 718
All employees .....	number.. 7 360	Total inventories, end of year .....	\$1,000.. 606 966
Total compensation <sup>2</sup> .....	\$1,000.. 372 254	Finished goods inventories, end of year .....	\$1,000.. 77 803
Annual payroll .....	\$1,000.. 287 382	Work-in-process inventories, end of year .....	\$1,000.. 441 184
Total fringe benefits .....	\$1,000.. 84 872	Materials and supplies inventories, end of year .....	\$1,000.. 87 979
Production workers, average for year .....	number.. 5 721	Gross book value of total assets at beginning of year .....	\$1,000.. 2 588 243
Production workers on March 12 .....	number.. 5 813	Total capital expenditures (new and used) .....	\$1,000.. 184 604
Production workers on May 12 .....	number.. 5 756	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 12 665
Production workers on August 12 .....	number.. 5 711	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 171 939
Production workers on November 12 .....	number.. 5 604	Total retirements <sup>2</sup> .....	\$1,000.. 33 277
Production-worker hours .....	1,000.. 12 640	Gross book value of total assets at end of year .....	\$1,000.. 2 739 570
Production-worker wages .....	\$1,000.. 218 511	Total depreciation during year <sup>2</sup> .....	\$1,000.. 122 094
Total cost of materials .....	\$1,000.. 5 459 268	Total rental payments <sup>2</sup> .....	\$1,000.. 4 862
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 5 166 851	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 580
Cost of resales .....	\$1,000.. D	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 4 282
Cost of fuels .....	\$1,000.. 79 642	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 13 550
Cost of purchased electricity .....	\$1,000.. 64 178	Response coverage ratio <sup>4</sup> .....	percent.. 81
Cost of contract work .....	\$1,000.. D	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 59 642
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 2 092 878	Response coverage ratio <sup>4</sup> .....	percent.. 81
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. 480 706	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 619
Total value of shipments .....	\$1,000.. 6 540 441	Response coverage ratio <sup>4</sup> .....	percent.. 81
Primary products value of shipments .....	\$1,000.. D	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 2 052
Secondary products value of shipments .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 81
Total miscellaneous receipts .....	\$1,000.. D	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 557
Value of resales .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 81
Contract receipts .....	\$1,000.. D	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 18
Other miscellaneous receipts .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 81
Primary products specialization ratio .....	percent.. D	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 490
Value of primary products shipments made in all industries .....	\$1,000.. 5 799 586	Response coverage ratio <sup>4</sup> .....	percent.. 81
Value of primary products shipments made in this industry .....	\$1,000.. D	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 2 529
Value of primary products shipments made in other industries .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 81
Coverage ratio .....	percent.. D		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	All establishments			All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
	E <sup>1</sup>	Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331411, PRIMARY SMELTING &amp; REFINING OF COPPER</b>												
<b>All establishments .....</b>	<b>1</b>	<b>16</b>	<b>15</b>	<b>7 360</b>	<b>287 382</b>	<b>5 721</b>	<b>12 640</b>	<b>218 511</b>	<b>1 074 665</b>	<b>5 459 268</b>	<b>6 540 441</b>	<b>184 604</b>
Establishments with 1 to 4 employees .....	-	1	-	D	D	D	D	D	D	D	D	D
Establishments with 5 to 9 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 10 to 19 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 20 to 49 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 50 to 99 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 100 to 249 employees .....	9	3	3	D	D	D	D	D	D	D	D	D
Establishments with 250 to 499 employees .....	-	6	6	2 231	99 625	1 730	3 829	76 245	638 777	2 371 257	3 031 085	86 986
Establishments with 500 to 999 employees .....	-	3	3	1 787	80 223	1 324	2 827	57 024	21 962	2 271 178	2 319 263	60 349
Establishments with 1,000 to 2,499 employees .....	-	2	2	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	-	-	-	-	-	-	-	-	-	-	-	-

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331411</b>	<b>Primary smelting &amp; refining of copper .....</b>	<b>16</b>	<b>7 360</b>	<b>287 382</b>	<b>5 721</b>	<b>12 640</b>	<b>218 511</b>	<b>1 074 665</b>	<b>5 459 268</b>	<b>6 540 441</b>	<b>184 604</b>

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331411</b>	<b>Primary copper</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>5 799 586</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>4 826 977</b>
3314110	Refined primary copper and copper-base alloy and primary copper smelter products, produced for further refining .....	N	X	X	5 799 586	N	X	X	N
33141101	Refined primary copper and copper-base alloy and primary copper smelter products, not commercial grade, produced for further refining, including blister or anode copper, etc. ....	N	X	X	5 799 527	N	X	X	N
3314110101	Primary copper smelter products, not of commercial grade, produced for further refining, including blister or anode copper, etc. .... 1,000 s tons ..	8	1 440.6	1 420.7	2 511 899	7	P1 105.2	1 065.4	1 907 303
3314110106	Refined primary cathode copper and copper-base alloy \$ .....	6	D	D	D	8	N	N	N
3314110111	Other refined primary copper and copper-base alloy, including wire bar, ingot and ingot bar, cakes, slabs, shot, etc. \$ .....	6	D	D	D	6	N	N	N
3314110Y	Primary copper nsk, total .....	N	X	X	59	N	X	X	N
3314110YWW	Primary copper, nsk, for nonadministrative-record establishments .....	N	X	X	59	N	X	X	N
3314110YWY	Primary copper, nsk, for administrative-record establishments .....	N	X	X	-	N	X	X	-

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; a 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331411</b>	<b>PRIMARY SMELTING &amp; REFINING OF COPPER</b>				
33131209	Aluminum and aluminum-base alloy ingot .....	D	D	N	N
33100009	All other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	-	X	D
33141103	Refined unalloyed copper (cathodes, ingots, cakes, slabs, etc.) and blister or anode copper .....	1 729.3	3 400 598	2 331.8	1 764 585
33100015	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	D
33141903	Precious metals and precious metal alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	N
33141907	All other magnesium and magnesium-base alloy shapes and forms (except castings, forgings, and fabr. metal products) .....	X	-	X	D
33141927	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	D
21223400	Mining copper ores, concentrates and precipitates (gross weight) .....	4 425.1	1 473 255	4 228.7	2 148 819
21220009	Mining precious metal ores and concentrates .....	X	D	X	D
21220015	Mining and all other nonferrous metal ores and concentrates .....	X	D	X	N
00190024	Copper and copper-base alloy scrap (except home scrap) .....	D	D	D	D
00190052	All other nonferrous metal and metal-base alloy scrap .....	X	-	X	N
00970099	All other materials and components, parts, containers, and supplies .....	X	110 460	X	127 726
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	-	X	2 030

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; a 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.



# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331411 PRIMARY SMELTING AND REFINING OF COPPER**

This U.S. industry comprises establishments primarily engaged in (1) smelting copper ore and/or (2) the primary refining of copper by electrolytic methods or other processes. Establishments in this industry make primary copper and copper-based alloys, such as brass and bronze, from ore or concentrates.

The data published with NAICS code 331411 include the following SIC industry:

3331 Primary copper

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.



In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F.

## Footnotes for Products Statistics and Materials Consumed by Kind

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### Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
\$ 3314110106 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314110111 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

### Part 2. Materials Consumed by Kind (Table 7)

Not applicable.



# Appendix G.

## Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33111111	33121 pt	33121 pt	3312223	33152 pt	33152 pt	3313161	33541	33541
3311111101	331215	3312111 pt	3312223101	3315251	3315201 pt	3313161101	3354115	3354115
3311111103	3312116	3312112 pt	3312223103	3315252	3315203 pt	3313161206	3354118	3354118
3311111105	3312153	3312151 pt	3312223105	3315253	3315205 pt	3313161311	3354125	3354125
3311111107	3312173	3312171 pt	3312223107	3315254	3315207 pt	3313161416	3354128	3354128
3311111109 pt	3312196 pt	3312131 pt	3312223109	3315255	3315209 pt	3313161YVW	3354100	3354100
3311111109 pt	3312196 pt	3312197 pt	3312223111 pt	3315214 pt	3315210 pt	3313163	33542	33542
3311111111	3312191	3312191	3312223111 pt	3315214 pt	3315213 pt	3313163101	3354261	3354261
3311111113	3312192	3312192	3312223113	3315256	3315216 pt	3313163106	3354263	3354263
3311111115 pt	3312195 pt	3312193	3312223122	3315257	3315222 pt	3313163YVW	3354200	3354200
3311111115 pt	3312195 pt	3312194	3312223124	3315258	3315223 pt	331316W	33540	33540
3311111117	3312198	3312198	3312223126	3315259	3315225 pt	331316WYVW	3354000	3354000
3311111YVW	3312100 pt	3312100 pt	3312223128	3315260	3315230 pt	331316WYVY	3354002	3354002
3311112	33991 pt	33991 pt	3312223YVW	3315200 pt	3315200 pt	3313191	33551	33551
3311112100 pt	3399100 pt	3399100 pt	3312225	33155	33155	3313191100	3355100	3355100
3311112100 pt	3399155	3399155	3312225100	3315500	3315500	3313193	33552	33552
33111113	33122	33122	3312227	33156	33156	3313193100 pt	3355200 pt	3355200
3311113100	3312200	3312200	3312227101	3315613	3315613	3313193100 pt	3355200 pt	3355222
3311115	33123	33123	3312227110	3315621	3315621	3313193100 pt	3355200 pt	3355225
3311115100	3312300	3312300	3312227112 pt	3315640 pt	3315635	3313197	33571	33571
3311117	33124	33124	3312227112 pt	3315640 pt	3315671	3313197100	3357100	3357100
3311117100	3312400	3312400	3312227YVW	3315600	3315600	3313199	33553	33553
3311119	33125	33125	3312229	33157	33157	3313199100	3355300	3355300
3311119100	3312500	3312500	3312229100	3315700	3315700	331319A	33574 pt	33575 pt
331111B	33126	33126	331222B	33159	33159	331319A100 pt	3357401	3357500 pt
331111B100	3312600	3312600	331222B110	3315951	3315951	331319A100 pt	3357400 pt	3357500 pt
331111D	33127	33127	331222B120	3315955	3315955	331319C	33554	33554
331111D100	3312700	3312700	331222B122	3315963	3315963	331319C100	3355400	3355400
331111F	33128	33128	331222B124	3315971	3315971	331319W pt	33550	33550
331111F100	3312800	3312800	331222B126 pt	3315998 pt	3315942	331319W pt	33570 pt	33570 pt
331111H	3312A	3312A	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3355000	3355000
331111H101	3312A17	3312A17	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3357000 pt	3357000 pt
331111H203	3312A26	3312A26	331222B126 pt	3315998 pt	3315973	331319WYVY pt	3355002	3355002
331111HYVW	3312A00	3312A00	331222B126 pt	3315998 pt	3315973	331319WYVY pt	3357002 pt	3357002 pt
331111J	3312B	3312B	331222BYVW	3315900	3315900	3314110 pt	33310	33310
331111J101	3312B62	3312B62	331222W	33150	33150	3314110 pt	33311	33311
331111J203	3312B66	3312B66	331222WYVW	3315000 pt	3315000 pt	3314110 pt	33312	33312
331111JYVW	3312B00	3312B00	331222WYVY	3315002 pt	3315002 pt	3314110101	3331100	3331100
331111L	3312C	3312C	3313110 pt	28190 pt	28190 pt	3314110106	3331217	3331217
331111L100	3312C00	3312C00	3313110 pt	28195	28195	3314110111	3331230	3331230
331111W pt	33120 pt	33120 pt	3313110 pt	2819500	2819500	3314110YVW pt	3331000	3331000
331111W pt	33990 pt	33990 pt	3313110YVW	2819000 pt	2819000 pt	3314110YVW pt	3331200	3331200
331111WYVW pt	3312000 pt	3312000 pt	3313110YVY	2819002 pt	2819002 pt	3314110YVY	3331002	3331002
331111WYVW pt	3399000 pt	3399000 pt	3313121	33347	33347	3314191	33391	33391
331111WYVY pt	3312002 pt	3312002 pt	3313121100	3334700	3334700	3314191100	3339100	3339100
331111WYVY pt	3399002 pt	3399002 pt	3313123	33348	33348	3314193	33392	33392
3311121	33132	33132	3313123100	3334800	3334800	3314193101 pt	3339231 pt	3339234
3311121100	3313200	3313200	331312W	33340	33340	3314193101 pt	3339231 pt	3339244
3311123	33133	33133	331312WYVW	3334000	3334000	3314193101 pt	3339231 pt	3339255
3311123100	3313300	3313300	331312WYVY	3334002	3334002	3314193111	3339251	3339251
3311125	33134 pt	33134 pt	3313141	33417	33417	3314193YVW	3339200	3339200
3311125101	3313416	3313415 pt	3313141100	3341700	3341700	3314197	33395	33395
3311125203 pt	3313487 pt	3313408	3313143	33418	33418	3314197101	3339525	3339525
3311125203 pt	3313487 pt	3313489 pt	3313143100	3341800	3341800	3314197206	3339535	3339535
3311125305	3313497	3313498 pt	3313145	33991 pt	33991 pt	3314197311	3339545	3339545
3311125YVW	3313400 pt	3313400 pt	3313145100	3399111	3399111	3314197YVW	3339500	3339500
331112W	33130 pt	33130 pt	331314W pt	33410 pt	33410 pt	3314199	33398	33398
331112WYVW	3313000 pt	3313000 pt	331314W pt	33990 pt	33990 pt	3314199101	3339805	3339805
331112WYVY	3313002 pt	3313002 pt	331314WYVW pt	3341000 pt	3341000 pt	3314199103	3339833	3339833
3312100	33170	33170	331314WYVW pt	3399000 pt	3399000 pt	3314199106 pt	3339851 pt	3339843
3312100100	3317000 pt	3317000 pt	331314WYVY pt	3341002 pt	3341002 pt	3314199106 pt	3339851 pt	3339863
3312100YVW	3317000 pt	3317000 pt	3313151	33531	33531	3314199121	3339873	3339873
3312100YVY	3317002	3317000 pt	3313151101	3353113	3353113	3314199126 pt	3339889 pt	3339889
3312211	33167	33167	3313151106	3353115	3353115	3314199126 pt	3339889 pt	3339889
3312211100	3316700	3316700	3313151YVW	3353100	3353100	3314199131	3339899	3339899
3312213	33168	33168	3313153	33532	33532	3314199YVW	3339800	3339800
3312213100	3316800	3316800	3313153101	3353223	3353223	331419W	33390	33390
331221W	33160	33160	3313153106	3353225	3353225	331419WYVW	3339000	3339000
331221WYVW	3316000	3316000	3313153211	3353227	3353227	331419WYVY	3339002	3339002
331221WYVY	3316002	3316002	3313153216	3353231	3353231	3314211	33511	33511
3312221	33151	33151	3313153221	3353233	3353233	3314211101	3351111	3351111
3312221110	3315113	3315113	3313153YVW	3353200	3353200	3314211206	3351131	3351131
3312221112	3315115	3315115	3313155	33533	33533	3314211YVW	3351100	3351100
3312221214	3315125	3315125	3313155100	3353300	3353300	3314213	33513	33513
3312221222	3315134	3315134	3313155	33533	33533	3314213101	3351311	3351311
3312221YVW	3315100	3315100	3313155100	3353300	3353300	3314213206	3351332	3351332
3312221101	3315113	3315113	331315W	335300 pt	335300 pt	3314213YVW	3351300	3351300
3312221112	3315115	3315115	331315WYVW	3353000 pt	3353000 pt	3314217	33514	33514
3312221214	3315125	3315125	331315WYVY	3353002 pt	3353002 pt	3314217101	3351413	3351413
3312221222	3315134	3315134				3314217206	3351435	3351435
3312221YVW	3315100	3315100				3314217YVW	3351400	3351400

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3314219	33515	33515	3314921	33991 pt	33991 pt	331511A	33221	33221
3314219101	3351516	3351516	3314921101	3399166	3399166	331511A100	3322100	3322100
3314219211	3351536	3351536	3314921206	3399177	3399177	331511C	33222	33222
3314219306	3351518	3351518	3314921311	3399186	3399186	331511C300	3322200	3322200
3314219316	3351538	3351538	3314921416 pt	3399189 pt	3399187	331511E	33216	33216
3314219YVW	3351500	3351500	3314921416 pt	3399189 pt	3399188	331511E200	3321600	3321600
331421W	33510	33510	3314921426	3399191	3399191	331511W pt	33210	33210
331421WYWW	3351000	3351000	3314921431	3399198	3399198	331511W pt	33210	33210
331421WYWW	3351002	3351002	3314921YVW	3399100 pt	3399100 pt	331511W pt	33220	33220
3314221	33572	33572	3314923	33413	33413	331511WYWW pt	3321000	3321000
3314221101	3357211	3357211	3314923101	3341311	3341311	331511WYWW pt	3322000	3322000
3314221106	3357251	3357251	3314923206	3341321	3341321	331511WYWW pt	3321002	3321002
3314221211	3357271	3357271	3314923211	3341333	3341333	331511WYWW pt	3322002	3322002
3314221216	3357281	3357281	3314923216	3341351	3341351	3315120	33240	33240
3314221YVW	3357200	3357200	3314923221	3341399	3341399	3315120101	3324063	3324063
3314223	33574 pt	33575 pt	3314923YVW	3341300	3341300	3315120106	3324064	3324064
3314223300 pt	3357402	3357500 pt	3314927	33414	33414	3315120216	3324067	3324067
3314223300 pt	3357400 pt	3357500 pt	3314927101 pt	3341431 pt	3341405	3315120311	3324066	3324066
331422W	33570 pt	33570 pt	3314927101 pt	3341431 pt	3341434	3315120YWW	3324000	3324000
331422WYWW	3357000 pt	3357000 pt	3314927101 pt	3341431 pt	3341444	3315120YWW	3324002	3324002
331422WYWW	3357002 pt	3357002 pt	3314927206	3341411	3341411	3315131	33252	33252
3314230 pt	33410 pt	33410 pt	3314927YVW	3341400	3341400	3315131101	3325211	3325211
3314230 pt	33412	33412	3314929	33415	33415	3315131206	3325215	3325215
3314230 pt	33990 pt	33990 pt	3314929101	3341525	3341525	3315131211	3325219	3325219
3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315131YVW	3325200	3325200
3314230101	3341224	3341224	3314929211	3341545	3341545	3315133	33254	33254
3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133101	3325421	3325421
3314230206	3341226	3341226	331492A pt	33134 pt	33134 pt	3315133106	3325431	3325431
3314230311	3341231	3341231	331492A pt	33416	33416	3315133YVW	3325400	3325400
3314230YVW pt	3341000 pt	3341000 pt	331492A101 pt	3313417	3313415 pt	3315135	33255	33255
3314230YVW pt	3341200	3341200	331492A101 pt	3341633	3341633	3315135101	3325551	3325551
3314230YVW pt	3399000 pt	3399000 pt	331492A106	3341635	3341635	3315135106	3325555	3325555
3314230YVW pt	3399100 pt	3399100 pt	331492A111	3341671	3341671	3315135111	3325559	3325559
3314230YVW pt	3341002 pt	3341002 pt	331492A116	3341697	3341697	3315135YVW	3325500	3325500
3314230YVW pt	3399002 pt	3399002 pt	331492A206	3313488	3313489 pt	331513W	33250	33250
3314911	33561	33561	331492A311	3313499	3313498 pt	331513WYWW	3325000	3325000
3314911101	3356161	3356161	331492AYVW pt	3313400 pt	3313400 pt	331513WYWW	3325002	3325002
3314911106	3356164	3356164	331492AYVW pt	3341600	3341600	3315210	33630	33630
3314911111	3356165	3356165	331492W pt	33130 pt	33130 pt	3315210000	3363000 pt	3363000 pt
3314911116	3356166	3356166	331492W pt	33410 pt	33410 pt	3315210YWW	3363000 pt	3363000 pt
3314911YVW	3356100	3356100	331492WYWW pt	33990 pt	33990 pt	3315220	33640	33640
3314913	33562	33562	331492WYWW pt	3313000 pt	3313000 pt	3315220101	3364011	3364011
3314913101	3356272	3356272	331492WYWW pt	3341000 pt	3341000 pt	3315220206	3364021	3364021
3314913106	3356274	3356274	331492WYWW pt	3399000 pt	3399000 pt	3315220311	3364031	3364031
3314913111	3356279	3356279	331492WYWW pt	3313002 pt	3313002 pt	3315220416	3364041	3364041
3314913YVW	3356200	3356200	331492WYWW pt	3341002 pt	3341002 pt	3315220521	3364051	3364051
3314915	33573	33573	3315111	33211	33211	3315220YWW	3364000	3364000
3314915100	3357300	3357300	3315111106	3321123	3321123	3315220YWW	3364002	3364002
3314917	33574 pt	33575 pt	3315111111	3321125	3321125	3315240	33650	33650
3314917400 pt	3357405	3357500 pt	3315111116	3321126	3321126	3315240101	3365011	3365011
3314917400 pt	3357400 pt	3357500 pt	3315111201	3321121	3321121	3315240206	3365031	3365031
3314919	33563	33563	3315111YVW	3321100	3321100	3315240311	3365051	3365051
3314919101	3356381	3356381	3315113	33212	33212	3315240416	3365073	3365073
3314919106	3356383	3356383	3315113101	3321222	3321222	3315240421	3365061	3365061
3314919111	3356386	3356386	3315113206	3321224	3321224	3315240YWW	3365000	3365000
3314919116	3356391	3356391	3315113211	3321231	3321231	3315240YVW	3365002	3365002
3314919YVW	3356300	3356300	3315113216	3321233	3321233	3315250	33660	33660
331491C	33569	33569	3315113221	3321240	3321240	3315250101	3366020	3366020
331491C101	3356934	3356934	3315113YVW	3321200	3321200	3315250206	3366021	3366021
331491C106	3356951	3356951	3315115	33217	33217	3315250221	3366025	3366025
331491C111	3356957	3356957	331515101	3321731	3321731	3315250411	3366022	3366022
331491C121	3356994	3356994	331515106	3321733	3321733	3315250416	3366024	3366024
331491C126	3356996	3356996	331515111	3321735	3321735	3315250426	3366026	3366026
331491C131	3356997	3356997	331515116	3321736	3321736	3315250531	3366031	3366031
331491C216	3356993	3356993	3315151YVW	3321700	3321700	3315250536	3366041	3366041
331491CYVW	3356900	3356900	3315117	33218	33218	3315250541	3366051	3366051
331491E	33576	33576	3315117101	3321822	3321822	3315250546	3366061	3366061
331491E100	3357600	3357600	3315117106	3321824	3321824	3315250651	3366072	3366072
331491G	33577	33577	3315117111	3321827	3321827	3315250YWW	3366000	3366000
331491G100	3357700	3357700	3315117116	3321830	3321830	3315250YVW	3366002	3366002
331491W pt	33560	33560	3315117121	3321833	3321833	3315280	33690	33690
331491W pt	33570 pt	33570 pt	3315117126	3321836	3321836	3315280116	3369085	3369085
331491WYWW pt	3356000	3356000	3315117YVW	3321800	3321800	3315280201	3369011	3369011
331491WYWW pt	3357000 pt	3357000 pt	3315119	33219	33219	3315280206	3369015	3369015
331491WYVW pt	3356002	3356002	3315119101	3321931	3321931	3315280211	3369023	3369023
331491WYVW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099 pt
331491WYVW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099 pt
			3315119206	3321939	3321939	3315280YWW	3369000	3369000
			3315119YVW	3321900	3321900	3315280YVW	3369002	3369002



# Primary Smelting and Refining of Nonferrous Metal (Except Copper and Aluminum)

1997

Issued October 1999

EC97M-3314B

## 1997 Economic Census

*Manufacturing*

Industry Series



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*Helping You Make Informed Decisions*

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Economics and Statistics Administration  
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**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.



# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331419</b>	<b>Other nonferrous metal primary smelting &amp; refining</b> .....	<b>128</b>	<b>141</b>	<b>10 018</b>	<b>405 426</b>	<b>7 135</b>	<b>16 102</b>	<b>253 847</b>	<b>1 425 339</b>	<b>2 103 794</b>	<b>3 538 056</b>	<b>168 964</b>
333900	Primary nonferrous metals, n.e.c. ....	N	141	10 018	405 426	7 135	16 102	253 847	1 425 339	2 103 794	3 538 056	168 964

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.  
<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331419, OTHER NONFERROUS METAL PRIMARY SMELTING &amp; REFINING</b>												
<b>United States</b> .....	-	<b>141</b>	<b>65</b>	<b>10 018</b>	<b>405 426</b>	<b>7 135</b>	<b>16 102</b>	<b>253 847</b>	<b>1 425 339</b>	<b>2 103 794</b>	<b>3 538 056</b>	<b>168 964</b>
California .....	-	13	4	237	10 707	135	272	3 992	58 882	109 899	168 678	4 166
New Jersey .....	-	10	3	563	23 195	310	775	8 831	63 136	93 394	157 232	8 226
New York .....	-	21	4	344	13 394	184	406	6 941	43 090	118 407	159 941	4 102
Pennsylvania .....	-	15	9	1 700	75 090	1 242	2 966	48 249	270 444	269 532	544 224	38 774
Tennessee .....	-	6	4	467	16 804	292	641	8 929	149 180	52 798	203 620	2 190

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331419, OTHER NONFERROUS METAL PRIMARY SMELTING &amp; REFINING</b>		<b>331419, OTHER NONFERROUS METAL PRIMARY SMELTING &amp; REFINING—Con.</b>	
Companies <sup>1</sup> .....	number.. 128	Value added .....	\$1,000.. 1 425 339
All establishments .....	number.. 141	Total inventories, beginning of year .....	\$1,000.. 482 652
Establishments with 1 to 19 employees .....	number.. 76	Finished goods inventories, beginning of year .....	\$1,000.. 111 095
Establishments with 20 to 99 employees .....	number.. 39	Work-in-process inventories, beginning of year .....	\$1,000.. 210 808
Establishments with 100 employees or more .....	number.. 26	Materials and supplies inventories, beginning of year .....	\$1,000.. 160 749
All employees .....	number.. 10 018	Total inventories, end of year .....	\$1,000.. 479 933
Total compensation <sup>2</sup> .....	\$1,000.. 526 226	Finished goods inventories, end of year .....	\$1,000.. 109 000
Annual payroll .....	\$1,000.. 405 426	Work-in-process inventories, end of year .....	\$1,000.. 203 980
Total fringe benefits .....	\$1,000.. 120 800	Materials and supplies inventories, end of year .....	\$1,000.. 166 953
Production workers, average for year .....	number.. 7 135	Gross book value of total assets at beginning of year .....	\$1,000.. 1 889 624
Production workers on March 12 .....	number.. 6 945	Total capital expenditures (new and used) .....	\$1,000.. 168 964
Production workers on May 12 .....	number.. 7 160	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 41 489
Production workers on August 12 .....	number.. 7 198	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 127 475
Production workers on November 12 .....	number.. 7 237	Total retirements <sup>2</sup> .....	\$1,000.. 14 822
Production-worker hours .....	1,000.. 16 102	Gross book value of total assets at end of year .....	\$1,000.. 2 043 766
Production-worker wages .....	\$1,000.. 253 847	Total depreciation during year <sup>2</sup> .....	\$1,000.. 136 624
Total cost of materials .....	\$1,000.. 2 103 794	Total rental payments <sup>2</sup> .....	\$1,000.. 22 708
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 1 791 493	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 4 495
Cost of resales .....	\$1,000.. 52 903	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 18 213
Cost of fuels .....	\$1,000.. 69 862	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 18 773
Cost of purchased electricity .....	\$1,000.. 151 340	Response coverage ratio <sup>4</sup> .....	percent.. 87
Cost of contract work .....	\$1,000.. 38 196	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 18 259
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 4 465 045	Response coverage ratio <sup>4</sup> .....	percent.. 87
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. 784 903	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 2 339
Total value of shipments .....	\$1,000.. 3 538 056	Response coverage ratio <sup>4</sup> .....	percent.. 87
Primary products value of shipments .....	\$1,000.. 3 201 152	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 4 307
Secondary products value of shipments .....	\$1,000.. 208 617	Response coverage ratio <sup>4</sup> .....	percent.. 87
Total miscellaneous receipts .....	\$1,000.. 128 287	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 959
Value of resales .....	\$1,000.. 83 523	Response coverage ratio <sup>4</sup> .....	percent.. 87
Contract receipts .....	\$1,000.. 34 302	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 858
Other miscellaneous receipts .....	\$1,000.. 10 462	Response coverage ratio <sup>4</sup> .....	percent.. 87
Primary products specialization ratio .....	percent.. 93	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 4 895
Value of primary products shipments made in all industries .....	\$1,000.. 3 759 409	Response coverage ratio <sup>4</sup> .....	percent.. 87
Value of primary products shipments made in this industry .....	\$1,000.. 3 201 152	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 7 897
Value of primary products shipments made in other industries .....	\$1,000.. 558 257	Response coverage ratio <sup>4</sup> .....	percent.. 87
Coverage ratio .....	percent.. 85		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.



**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331419, OTHER NONFERROUS METAL PRIMARY SMELTING &amp; REFINING</b>												
<b>All establishments</b> .....	-	<b>141</b>	<b>65</b>	<b>10 018</b>	<b>405 426</b>	<b>7 135</b>	<b>16 102</b>	<b>253 847</b>	<b>1 425 339</b>	<b>2 103 794</b>	<b>3 538 056</b>	<b>168 964</b>
Establishments with 1 to 4 employees .....	9	41	-	80	2 535	59	96	1 512	9 110	11 496	20 601	1 039
Establishments with 5 to 9 employees .....	8	23	-	153	5 404	104	187	2 970	17 426	22 025	39 484	1 922
Establishments with 10 to 19 employees .....	1	12	-	165	6 005	117	227	3 756	21 203	30 369	51 927	1 764
Establishments with 20 to 49 employees .....	-	21	21	693	25 212	485	948	14 624	134 583	227 364	361 133	11 242
Establishments with 50 to 99 employees .....	-	18	18	1 225	44 429	890	1 816	25 705	200 036	216 582	412 061	14 117
Establishments with 100 to 249 employees .....	-	13	13	1 924	73 285	1 314	2 837	46 469	315 032	363 550	684 009	27 725
Establishments with 250 to 499 employees .....	-	9	9	3 062	128 460	2 088	4 614	77 127	358 942	786 383	1 167 578	74 562
Establishments with 500 to 999 employees .....	-	4	4	2 716	120 096	2 078	5 377	81 684	369 007	446 025	801 263	36 593
Establishments with 1,000 to 2,499 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	8	58	-	272	8 829	195	322	5 256	31 778	39 444	71 202	3 649

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331419</b>	<b>Other nonferrous metal primary smelting &amp; refining</b> .....	<b>141</b>	<b>10 018</b>	<b>405 426</b>	<b>7 135</b>	<b>16 102</b>	<b>253 847</b>	<b>1 425 339</b>	<b>2 103 794</b>	<b>3 538 056</b>	<b>168 964</b>
3314191	Primary zinc residues and other zinc smelter products, produced for further refining .....	2	D	D	D	D	D	D	D	D	D
3314193	Refined primary zinc .....	12	1 630	58 928	1 170	2 840	37 453	349 520	319 743	659 208	13 050
3314197	Primary precious metals and precious metal alloys .....	16	819	31 440	501	1 043	15 978	168 375	287 258	452 302	7 003
3314199	Other primary nonferrous metals, nec .....	43	D	D	D	D	D	D	D	D	D

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331419</b>	<b>Primary nonferrous metals, nec</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>3 759 409</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>2 873 078</b>
3314191	Primary zinc residues and other zinc smelter products, produced for further refining .....	N	X	X	D	N	X	X	D
33141911	Primary zinc residues and other zinc smelter products not of commercial grade, produced for further refining, including base bullion, matte, speiss, etc. ....	N	X	X	D	N	X	X	N
3314191100	Primary zinc residues and other zinc smelter products not of commercial grade, produced for further refining, including base bullion, matte, speiss, etc. ....	3	X	X	D	3	X	X	D
3314193	Refined primary zinc .....	N	X	X	526 730	N	X	X	D
33141931	Refined primary zinc .....	N	X	X	526 730	N	X	X	N
3314193101	Refined primary unalloyed zinc, including all ASTM specification zinc \$ .....	7	X	X	355 210	N	X	X	N
3314193111	Refined primary zinc-base alloys \$ ..... 1,000 s tons ..	8	S	S	171 520	7	<sup>p</sup> 52.1	<sup>p</sup> 51.4	61 498
3314193Y	Refined primary zinc, nsk .....	N	X	X	-	N	X	X	N
3314193YWV	Refined primary zinc, nsk .....	N	X	X	-	N	X	X	-
3314197	Primary precious metals and precious metal alloys .....	N	X	X	754 646	N	X	X	698 368
33141971	Primary gold and gold alloys .....	N	X	X	462 562	N	X	X	N
3314197101	Primary gold and gold alloys \$ ..... 1,000 troy ounces ..	17	<sup>q</sup> 1 978.5	<sup>p</sup> 1 957.5	462 562	15	S	1 065.5	371 003
33141972	Primary silver and silver alloys .....	N	X	X	265 190	N	X	X	N
3314197206	Primary silver and silver alloys \$ ..... 1,000 troy ounces ..	14	S	S	265 190	12	S	S	310 347
33141973	Primary platinum and platinum alloys, including platinum-group metals .....	N	X	X	26 894	N	X	X	N
3314197311	Primary platinum and platinum alloys, including platinum-group metals \$ ..... 1,000 troy ounces ..	8	198.5	90.0	26 894	8	S	<sup>q</sup> 61.3	17 018
3314197Y	Primary precious metals and precious metal alloys, nsk .....	N	X	X	-	N	X	X	N
3314197YWV	Primary precious metals and precious metal alloys, nsk .....	N	X	X	-	N	X	X	-
3314199	Other primary nonferrous metals, nec .....	N	X	X	D	N	X	X	1 555 693
33141991	Primary nonferrous metals .....	N	X	X	D	N	X	X	N
3314199101	Primary lead and lead-base alloys \$ .....	12	X	X	353 161	8	X	X	258 060
3314199103	Primary magnesium and magnesium-base alloys \$ ..... 1,000 s tons ..	7	S	S	508 984	3	155.5	162.5	373 403
3314199106	Primary nickel, nickel-base alloys, and tin \$ .....	12	X	X	331 724	N	X	X	N
3314199121	Primary unalloyed silicon \$ .....	8	X	X	457 952	6	X	X	144 409
3314199126	Other primary unrefined nonferrous metals, including metal bearing furnace residues and other metal products .....	5	X	X	D	N	X	X	N
3314199131	Other primary refined nonferrous metals and their alloys, including cadmium, antimony, cobalt, molybdenum, titanium sponge, etc. \$ .....	20	X	X	424 852	19	X	X	381 995
3314199Y	Other primary nonferrous metals, nec, nsk .....	N	X	X	-	N	X	X	N
3314199YWV	Other primary nonferrous metals, nec, nsk .....	N	X	X	-	N	X	X	58 976
331419W	Primary nonferrous metals, nec, nsk, total .....	N	X	X	69 857	N	X	X	121 309
331419WY	Primary nonferrous metals, nec, nsk .....	N	X	X	69 857	N	X	X	N
331419WYWV	Primary nonferrous metals, nec, nsk, for nonadministrative-record establishments .....	N	X	X	4 017	N	X	X	111 948
331419WYWY	Primary nonferrous metals, nec, nsk, for administrative-record establishments .....	N	X	X	65 840	N	X	X	9 361

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: <sup>p</sup> 10 to 19 percent estimated; <sup>q</sup> 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3314191</b>	<b>PRIMARY ZINC RESIDUES AND OTHER ZINC SMELTER PRODUCTS, PRODUCED FOR FURTHER REFINING</b>		
	United States .....	D	D
<b>3314193</b>	<b>REFINED PRIMARY ZINC</b>		
	United States .....	526 730	D
	Illinois .....	158 678	N
<b>3314197</b>	<b>PRIMARY PRECIOUS METALS AND PRECIOUS METAL ALLOYS</b>		
	United States .....	754 646	698 368
	Arizona .....	67 397	N
	New York .....	126 074	N
<b>3314199</b>	<b>OTHER PRIMARY NONFERROUS METALS, NEC</b>		
	United States .....	D	1 555 693
	Ohio .....	156 623	95 731
	Pennsylvania .....	266 090	N
	Tennessee .....	33 633	N
	Washington .....	245 467	157 221

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331419</b>	<b>OTHER NONFERROUS METAL PRIMARY SMELTING &amp; REFINING</b>				
33131209	Aluminum and aluminum-base alloy ingot .....	1,000 s tons..	D	D	D
33100009	All other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....		X	X	D
33141103	Refined unalloyed copper (cathodes, ingots, cakes, slabs, etc.) and blister or anode copper .....	1,000 s tons..	D	D	D
33100015	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....		X	X	D
33141923	Lead-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....		X	6 952	N
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	1,000 s tons..	92.9	79 851	N
33141939	Tin shapes and forms (except castings, forgings, and fabricated metal products) .....		X	35 256	N
33141903	Precious metals and precious metal alloy shapes and forms (except castings, forgings, and fabricated metal products) .....		X	60 126	N
33141907	All other magnesium and magnesium-base alloy shapes and forms (except castings, forgings, and fabr. metal products) .....		X	D	D
33141927	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....		X	98 101	D
21223400	Mining copper ores, concentrates and precipitates (gross weight) .....	1,000 s tons..	D	D	D
21220015	Mining and all other nonferrous metal ores and concentrates .....		X	731 915	N
21220009	Mining precious metal ores and concentrates .....		X	-	D
00190040	Aluminum and aluminum-base alloy scrap (except home scrap) .....	1,000 s tons..	D	D	N
00190024	Copper and copper-base alloy scrap (except home scrap) .....	1,000 s tons..	D	D	D
00190025	Lead and lead-base alloy scrap .....		X	D	D
00190026	Zinc and zinc-base alloy scrap (including drosses and skimmings) .....		X	D	D
00190027	Timplate scrap (including shredded steel can scrap) .....		X	D	D
00190051	Precious metal and precious metal alloy scrap .....		X	106 270	D
00190052	All other nonferrous metal and metal-base alloy scrap .....		X	159 711	D
33131100	Alumina (gross weight) .....	1,000 s tons..	D	D	N
00970099	All other materials and components, parts, containers, and supplies .....		X	261 525	361 662
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....		X	51 689	108 124

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; a 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.



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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331419 PRIMARY SMELTING AND REFINING OF NONFERROUS METAL (EXCEPT COPPER AND ALUMINUM)**

This U.S. industry comprises establishments primarily engaged in (1) making (i.e., the primary production) nonferrous metals by smelting ore and/or (2) the primary refining of nonferrous metals by electrolytic methods or other processes.

The data published with NAICS code 331419 include the following SIC industry:

3339 Primary nonferrous metals, n.e.c.

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.



# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F.

## Footnotes for Products Statistics and Materials Consumed by Kind

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### Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
\$ 3314193101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314193111 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314197101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314197206 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314197311 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314199101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314199103 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314199106 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314199121 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314199131 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

### Part 2. Materials Consumed by Kind (Table 7)

Not applicable.



1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3314219	33515	33515	3314921	33991 pt	33991 pt	331511A	33221	33221
3314219101	3351516	3351516	3314921101	3399166	3399166	331511A100	3322100	3322100
3314219211	3351536	3351536	3314921206	3399177	3399177	331511C	33222	33222
3314219306	3351518	3351518	3314921311	3399186	3399186	331511C300	3322200	3322200
3314219316	3351538	3351538	3314921416 pt	3399189 pt	3399189	331511E	33216	33216
3314219YVW	3351500	3351500	3314921416 pt	3399189 pt	3399188	331511E200	3321600	3321600
331421W	33510	33510	3314921426	3399191	3399191	331511W pt	33210	33210
331421WYWW	3351000	3351000	3314921431	3399198	3399198	331511W pt	33220	33220
331421WYWW	3351002	3351002	3314921YVW	3399100 pt	3399100 pt	331511WYWW pt	3321000	3321000
3314221	33572	33572	3314923	33413	33413	331511WYWW pt	3322000	3322000
3314221101	3357211	3357211	3314923101	3341311	3341311	331511WYWW pt	3321002	3321002
3314221106	3357251	3357251	3314923206	3341321	3341321	331511WYWW pt	3322002	3322002
3314221211	3357271	3357271	3314923211	3341333	3341333	3315120	33240	33240
3314221216	3357281	3357281	3314923216	3341351	3341351	3315120101	3324063	3324063
3314221YVW	3357200	3357200	3314923221	3341399	3341399	3315120106	3324064	3324064
3314223	33574 pt	33575 pt	3314923YVW	3341300	3341300	3315120216	3324067	3324067
3314223300 pt	3357402	3357500 pt	3314927	33414	33414	3315120311	3324066	3324066
3314223300 pt	3357400 pt	3357500 pt	3314927101 pt	3341431 pt	3341405	3315120YWW	3324000	3324000
331422W	33570 pt	33570 pt	3314927101 pt	3341431 pt	3341434	3315120YVW	3324002	3324002
331422WYWW	3357000 pt	3357000 pt	3314927101 pt	3341431 pt	3341444	3315131	33252	33252
331422WYWW	3357002 pt	3357002 pt	3314927206	3341411	3341411	3315131101	3325211	3325211
3314230 pt	33410 pt	33410 pt	3314927YVW	3341400	3341400	3315131206	3325215	3325215
3314230 pt	33412	33412	3314929	33415	33415	3315131211	3325219	3325219
3314230 pt	33990 pt	33990 pt	3314929101	3341525	3341525	3315131YVW	3325200	3325200
3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315133	33254	33254
3314230101	3341224	3341224	3314929211	3341545	3341545	3315133101	3325421	3325421
3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133106	3325431	3325431
3314230206	3341226	3341226	331492A pt	33134 pt	33134 pt	3315133YVW	3325400	3325400
3314230311	3341231	3341231	331492A pt	33416	33416	3315135	33255	33255
3314230YVW pt	3341000 pt	3341000 pt	331492A101 pt	3313417	3313415 pt	3315135101	3325551	3325551
3314230YVW pt	3341200	3341200	331492A101 pt	3341633	3341633	3315135106	3325555	3325555
3314230YVW pt	3399000 pt	3399000 pt	331492A106	3341635	3341635	3315135111	3325559	3325559
3314230YVW pt	3399100 pt	3399100 pt	331492A111	3341671	3341671	3315135YVW	3325500	3325500
3314230YVW pt	3341002 pt	3341002 pt	331492A116	3341697	3341697	331513W	33250	33250
3314230YVW pt	3399002 pt	3399002 pt	331492A206	3313488	3313489 pt	331513WYWW	3325000	3325000
3314911	33561	33561	331492A311	3313499	3313498 pt	331513WYWW	3325002	3325002
3314911101	3356161	3356161	331492AYVW pt	3313400 pt	3313400 pt	3315210	33630	33630
3314911106	3356164	3356164	331492AYVW pt	3341600	3341600	3315210000	3363000 pt	3363000 pt
3314911111	3356165	3356165	331492W pt	33130 pt	33130 pt	3315210YVW	3363002	3363002
3314911116	3356166	3356166	331492W pt	33410 pt	33410 pt	3315220	33640	33640
3314911YVW	3356100	3356100	331492WYWW pt	33990 pt	33990 pt	3315220101	3364011	3364011
3314913	33562	33562	331492WYWW pt	3313000 pt	3313000 pt	3315220206	3364021	3364021
3314913101	3356272	3356272	331492WYWW pt	3341000 pt	3341000 pt	3315220311	3364031	3364031
3314913106	3356274	3356274	331492WYWW pt	3399000 pt	3399000 pt	3315220416	3364041	3364041
3314913111	3356279	3356279	331492WYWW pt	3313002 pt	3313002 pt	3315220521	3364051	3364051
3314913YVW	3356200	3356200	331492WYWW pt	3341002 pt	3341002 pt	3315220YVW	3364000	3364000
3314915	33573	33573	331492YVW pt	3399002 pt	3399002 pt	3315240	33650	33650
3314915100	3357300	3357300	3315111	33211	33211	3315240101	3365011	3365011
3314917	33574 pt	33575 pt	3315111106	3321123	3321123	3315240206	3365031	3365031
3314917400 pt	3357405	3357500 pt	3315111111	3321125	3321125	3315240311	3365051	3365051
3314917400 pt	3357400 pt	3357500 pt	3315111116	3321126	3321126	3315240416	3365073	3365073
3314919	33563	33563	3315111201	3321121	3321121	3315240YVW	3365000	3365000
3314919101	3356381	3356381	3315111YVW	3321100	3321100	3315240YVW	3365002	3365002
3314919106	3356383	3356383	3315113	33212	33212	3315250	33660	33660
3314919111	3356386	3356386	3315113101	3321222	3321222	3315250101	3366020	3366020
3314919116	3356391	3356391	3315113206	3321224	3321224	3315250206	3366021	3366021
3314919YVW	3356300	3356300	3315113211	3321231	3321231	3315250221	3366025	3366025
331491C	33569	33569	3315113216	3321233	3321233	3315250411	3366022	3366022
331491C101	3356934	3356934	3315113221	3321240	3321240	3315250416	3366024	3366024
331491C106	3356951	3356951	3315113YVW	3321200	3321200	3315250531	3366031	3366031
331491C111	3356957	3356957	3315115	33217	33217	3315250536	3366041	3366041
331491C121	3356994	3356994	331515101	3321731	3321731	3315250541	3366051	3366051
331491C126	3356996	3356996	331515106	3321733	3321733	3315250546	3366061	3366061
331491C131	3356997	3356997	331515111	3321735	3321735	3315250651	3366072	3366072
331491C216	3356993	3356993	331515116	3321736	3321736	3315250YVW	3366000	3366000
331491CYVW	3356900	3356900	3315151YVW	3321700	3321700	3315250YVW	3366002	3366002
331491E	33576	33576	3315117	33218	33218	3315280	33690	33690
331491E100	3357600	3357600	3315117101	3321822	3321822	3315280116	3369085	3369085
331491G	33577	33577	3315117106	3321824	3321824	3315280201	3369011	3369011
331491G100	3357700	3357700	3315117111	3321827	3321827	3315280206	3369015	3369015
331491W pt	33560	33560	3315117116	3321830	3321830	3315280211	3369023	3369023
331491W pt	33570 pt	33570 pt	3315117121	3321833	3321833	3315280221 pt	3369099 pt	3369099 pt
331491WYWW pt	3356000	3356000	3315117126	3321836	3321836	3315280221 pt	3369099 pt	3369099 pt
331491WYWW pt	3357000 pt	3357000 pt	3315117YVW	3321800	3321800	3315280YVW	3369000	3369000
331491WYVW pt	3356002	3356002	3315119	33219	33219	3315280YVW	3369002	3369002
331491WYVW pt	3357002 pt	3357002 pt	3315119101	3321931	3321931			
			3315119111	3321949	3321949			
			3315119116	3321998	3321998			
			3315119206	3321939	3321939			
			3315119YVW	3321900	3321900			



# Copper Rolling, Drawing, and Extruding

1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for  
Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the



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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331421</b>	<b>Copper rolling, drawing, &amp; extruding</b> .....	<b>89</b>	<b>128</b>	<b>21 110</b>	<b>785 033</b>	<b>16 580</b>	<b>36 538</b>	<b>567 507</b>	<b>2 309 099</b>	<b>5 345 054</b>	<b>7 666 647</b>	<b>151 986</b>
335100	Copper rolling & drawing .....	N	128	21 110	785 033	16 580	36 538	567 507	2 309 099	5 345 054	7 666 647	151 986

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331421, COPPER ROLLING, DRAWING, &amp; EXTRUDING</b>												
<b>United States</b> .....	-	<b>128</b>	<b>92</b>	<b>21 110</b>	<b>785 033</b>	<b>16 580</b>	<b>36 538</b>	<b>567 507</b>	<b>2 309 099</b>	<b>5 345 054</b>	<b>7 666 647</b>	<b>151 986</b>
Illinois .....	-	10	8	3 384	146 122	2 685	6 281	105 457	406 135	653 686	1 059 211	18 154
Michigan .....	-	6	5	967	32 172	793	1 808	24 986	104 828	318 991	420 052	7 235
New Jersey .....	-	10	9	935	28 145	728	1 579	19 052	59 968	87 389	149 860	6 076
New York .....	-	8	4	1 637	74 850	1 193	2 564	51 557	144 264	416 612	566 423	16 488
Ohio .....	-	7	7	1 199	47 764	836	1 877	30 025	148 721	352 266	504 913	13 827
Pennsylvania .....	-	12	12	2 628	96 930	1 821	3 971	63 350	220 568	573 296	797 654	11 955

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331421, COPPER ROLLING, DRAWING, &amp; EXTRUDING</b>		<b>331421, COPPER ROLLING, DRAWING, &amp; EXTRUDING—Con.</b>	
Companies <sup>1</sup> .....	number.. 89	Value added .....	\$1,000.. 2 309 099
All establishments .....	number.. 128	Total inventories, beginning of year .....	\$1,000.. 821 793
Establishments with 1 to 19 employees .....	number.. 36	Finished goods inventories, beginning of year .....	\$1,000.. 204 455
Establishments with 20 to 99 employees .....	number.. 38	Work-in-process inventories, beginning of year .....	\$1,000.. 407 262
Establishments with 100 employees or more .....	number.. 54	Materials and supplies inventories, beginning of year .....	\$1,000.. 210 076
All employees .....	number.. 21 110	Total inventories, end of year .....	\$1,000.. 822 409
Total compensation <sup>2</sup> .....	\$1,000.. 1 011 639	Finished goods inventories, end of year .....	\$1,000.. 206 329
Annual payroll .....	\$1,000.. 785 033	Work-in-process inventories, end of year .....	\$1,000.. 392 894
Total fringe benefits .....	\$1,000.. 226 606	Materials and supplies inventories, end of year .....	\$1,000.. 223 186
Production workers, average for year .....	number.. 16 580	Gross book value of total assets at beginning of year .....	\$1,000.. 2 306 105
Production workers on March 12 .....	number.. 16 782	Total capital expenditures (new and used) .....	\$1,000.. 151 986
Production workers on May 12 .....	number.. 16 603	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 9 293
Production workers on August 12 .....	number.. 16 438	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 142 693
Production workers on November 12 .....	number.. 16 497	Total retirements <sup>2</sup> .....	\$1,000.. 26 550
Production-worker hours .....	1,000.. 36 538	Gross book value of total assets at end of year .....	\$1,000.. 2 431 541
Production-worker wages .....	\$1,000.. 567 507	Total depreciation during year <sup>2</sup> .....	\$1,000.. 128 939
Total cost of materials .....	\$1,000.. 5 345 054	Total rental payments <sup>2</sup> .....	\$1,000.. 17 040
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 4 982 633	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 3 768
Cost of resales .....	\$1,000.. 133 961	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 13 272
Cost of fuels .....	\$1,000.. 59 285	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 8 361
Cost of purchased electricity .....	\$1,000.. 111 856	Response coverage ratio <sup>4</sup> .....	percent.. 91
Cost of contract work .....	\$1,000.. 57 319	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 85 372
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 2 315 350	Response coverage ratio <sup>4</sup> .....	percent.. 91
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. D	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 5 470
Total value of shipments .....	\$1,000.. 7 666 647	Response coverage ratio <sup>4</sup> .....	percent.. 91
Primary products value of shipments .....	\$1,000.. 7 106 408	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 5 083
Secondary products value of shipments .....	\$1,000.. 132 374	Response coverage ratio <sup>4</sup> .....	percent.. 91
Total miscellaneous receipts .....	\$1,000.. 427 865	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 3 998
Value of resales .....	\$1,000.. 139 608	Response coverage ratio <sup>4</sup> .....	percent.. 91
Contract receipts .....	\$1,000.. 239 489	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 3 033
Other miscellaneous receipts .....	\$1,000.. 48 768	Response coverage ratio <sup>4</sup> .....	percent.. 91
Primary products specialization ratio .....	percent.. 98	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 3 654
Value of primary products shipments made in all industries .....	\$1,000.. 7 169 948	Response coverage ratio <sup>4</sup> .....	percent.. 91
Value of primary products shipments made in this industry .....	\$1,000.. 7 106 408	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 7 195
Value of primary products shipments made in other industries .....	\$1,000.. 63 540	Response coverage ratio <sup>4</sup> .....	percent.. 91
Coverage ratio .....	percent.. 99		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331421. COPPER ROLLING, DRAWING, &amp; EXTRUDING</b>												
<b>All establishments .....</b>	-	<b>128</b>	<b>92</b>	<b>21 110</b>	<b>785 033</b>	<b>16 580</b>	<b>36 538</b>	<b>567 507</b>	<b>2 309 099</b>	<b>5 345 054</b>	<b>7 666 647</b>	<b>151 986</b>
Establishments with 1 to 4 employees .....	8	20	-	29	879	25	44	590	2 577	5 658	8 205	194
Establishments with 5 to 9 employees .....	7	9	-	57	1 946	43	78	1 180	6 565	11 118	17 989	360
Establishments with 10 to 19 employees .....	5	7	-	83	2 164	64	108	1 553	5 763	12 427	18 277	357
Establishments with 20 to 49 employees .....	1	20	20	616	21 864	468	960	13 932	68 981	90 876	158 267	5 338
Establishments with 50 to 99 employees .....	-	18	18	1 415	48 346	1 072	2 425	33 072	161 127	519 853	676 457	13 552
Establishments with 100 to 249 employees .....	-	26	26	4 204	156 165	3 158	7 207	107 350	491 340	1 003 249	1 495 635	44 362
Establishments with 250 to 499 employees .....	-	18	18	6 033	211 633	4 746	10 528	155 187	750 350	2 109 499	2 874 549	36 509
Establishments with 500 to 999 employees .....	-	8	8	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	2	2	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	7	28	-	115	3 165	94	160	2 272	8 914	19 559	28 511	767

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331421</b>	<b>Copper rolling, drawing, &amp; extruding .....</b>	<b>128</b>	<b>21 110</b>	<b>785 033</b>	<b>16 580</b>	<b>36 538</b>	<b>567 507</b>	<b>2 309 099</b>	<b>5 345 054</b>	<b>7 666 647</b>	<b>151 986</b>
3314211	Copper wire, bare and tinned (nonelectrical) .....	15	1 305	40 839	987	2 132	25 212	103 542	199 190	306 955	12 877
3314213	Copper and copper-base alloy rod, bar, and shapes .....	28	4 642	172 997	3 421	7 481	120 649	679 982	2 107 483	2 789 096	37 344
3314217	Copper and copper-base alloy sheet, strip, and plate .....	20	7 316	320 285	5 671	13 175	233 824	884 560	1 353 737	2 241 049	61 252
3314219	Copper and copper-base alloy pipe and tube .....	33	7 655	245 323	6 343	13 446	183 675	626 533	1 652 951	2 283 347	37 757

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331421</b>	<b>Rolled, drawn, or extruded copper products .....</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>7 169 948</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>5 496 446</b>
3314211	Copper wire, bare and tinned (nonelectrical) .....	N	X	X	300 087	N	X	X	227 943
33142111	Unalloyed copper wire, bare and tinned (nonelectrical), made in rolling mills .....	N	X	X	175 245	N	X	X	N
3314211101	Unalloyed copper wire, bare and tinned (nonelectrical), made in rolling mills \$ .....	9	109.3	102.4	175 245	10	S	139.5	105 112
33142112	Alloyed copper wire, bare and tinned (nonelectrical), made in rolling mills .....	N	X	X	124 842	N	X	X	N
3314211206	Alloyed copper wire, bare and tinned (nonelectrical), made in rolling mills \$ .....	18	43.9	32.9	124 842	16	32.7	30.1	116 081
3314211Y	Copper wire, bare and tinned (nonelectrical), nsk .....	N	X	X	-	N	X	X	N
3314211YWV	Copper wire, bare and tinned (nonelectrical), nsk .....	N	X	X	-	N	X	X	6 750
3314213	Copper and copper-base alloy rod, bar, and shapes .....	N	X	X	2 675 502	N	X	X	2 312 068
33142131	Unalloyed copper and copper-base alloy rod, bar, and shapes (except electric rod) .....	N	X	X	818 528	N	X	X	N
3314213101	Unalloyed copper and copper-base alloy rod, bar, and shapes (except electric rod) .....	13	576.2	562.0	818 528	9	961.6	957.5	829 860
33142132	Alloyed copper and copper-base alloy rod, bar, and shapes (except electric rod) .....	N	X	X	1 856 974	N	X	X	N
3314213206	Alloyed copper and copper-base alloy rod, bar, and shapes (except electric rod) .....	24	982.2	915.2	1 856 974	22	1 329.4	1 229.6	1 482 057
3314213Y	Copper and copper-base alloy rod, bar, and shapes, nsk .....	N	X	X	-	N	X	X	N
3314213YWV	Copper and copper-base alloy rod, bar, and shapes, nsk .....	N	X	X	-	N	X	X	151
3314217	Copper and copper-base alloy sheet, strip, and plate .....	N	X	X	1 886 183	N	X	X	1 352 725
33142171	Unalloyed copper and copper-base alloy sheet, strip, and plate .....	N	X	X	411 335	N	X	X	N
3314217101	Unalloyed copper and copper-base alloy sheet, strip, and plate .....	13	197.8	182.5	411 335	9	182.2	180.1	316 375
33142172	Alloyed copper and copper-base alloy sheet, strip, and plate (including military cups and discs) .....	N	X	X	1 474 848	N	X	X	N
3314217206	Alloyed copper and copper-base alloy sheet, strip, and plate (including military cups and discs) .....	17	422.0	485.6	1 474 848	25	368.7	364.6	1 033 618
3314217Y	Copper and copper-base alloy sheet, strip, and plate, nsk .....	N	X	X	-	N	X	X	N
3314217YWV	Copper and copper-base alloy sheet, strip, and plate, nsk .....	N	X	X	-	N	X	X	2 732
3314219	Copper and copper-base alloy pipe and tube .....	N	X	X	2 269 415	N	X	X	1 531 681
33142191	Unalloyed copper and copper-base alloy plumbing pipe and tube .....	N	X	X	972 776	N	X	X	N
3314219101	Unalloyed copper and copper-base alloy plumbing pipe and tube .....	6	438.3	459.4	972 776	7	492.4	243.7	770 226
33142192	Alloyed copper and copper-base alloy plumbing pipe and tube .....	N	X	X	D	N	X	X	N
3314219211	Alloyed copper and copper-base alloy plumbing pipe and tube .....	3	D	D	D	4	S	S	N
33142193	Other alloyed and unalloyed copper and copper-base pipe and tube .....	N	X	X	D	N	X	X	N
3314219306	Other unalloyed copper and copper-base alloy pipe and tube .....	7	100.9	84.3	365 077	12	104.5	156.6	336 610
3314219316	Other alloyed copper and copper-base alloy pipe and tube .....	17	D	D	D	17	S	S	N
3314219Y	Copper and copper-base alloy pipe and tube, nsk .....	N	X	X	-	N	X	X	N
3314219YWV	Copper and copper-base alloy pipe and tube, nsk .....	N	X	X	-	N	X	X	-

See footnotes at end of table.

**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331421</b>	<b>Rolled, drawn, or extruded copper products—Con.</b>								
331421W	Rolled, drawn, or extruded copper products, nsk, total .....	N	X	X	38 761	N	X	X	72 029
331421WY	Rolled, drawn, or extruded copper products, nsk, total .....	N	X	X	38 761	N	X	X	N
331421WYWW	Rolled, drawn, or extruded copper products, nsk, for nonadministrative-record establishments .....	N	X	X	18 826	N	X	X	64 130
331421WYWY	Rolled, drawn, or extruded copper products, nsk, for administrative-record establishments .....	N	X	X	19 935	N	X	X	3 936

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3314211</b>	<b>COPPER WIRE, BARE AND TINNED (NONELECTRICAL)</b>		
	United States .....	<b>300 087</b>	<b>227 943</b>
	Connecticut .....	36 175	N
	North Carolina .....	9 019	N
	Pennsylvania .....	23 632	N
	Wisconsin .....	5 633	N
<b>3314213</b>	<b>COPPER AND COPPER-BASE ALLOY ROD, BAR, AND SHAPES</b>		
	United States .....	<b>2 675 502</b>	<b>2 312 068</b>
	New Jersey .....	36 672	N
	Pennsylvania .....	213 690	153 008
<b>3314217</b>	<b>COPPER AND COPPER-BASE ALLOY SHEET, STRIP, AND PLATE</b>		
	United States .....	<b>1 886 183</b>	<b>1 352 725</b>
	Connecticut .....	167 318	127 539
	Pennsylvania .....	301 170	202 382
<b>3314219</b>	<b>COPPER AND COPPER-BASE ALLOY PIPE AND TUBE</b>		
	United States .....	<b>2 269 415</b>	<b>1 531 681</b>
	New Jersey .....	20 798	N
	Pennsylvania .....	234 626	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331421</b>	<b>COPPER ROLLING, DRAWING, &amp; EXTRUDING</b>				
33131205	Unalloyed aluminum and aluminum-base alloy ingot, pig, and shot .....1,000 s tons..	D	D	D	D
33131207	Alloyed aluminum and aluminum-base alloy ingot, pig, and shot.....1,000 s tons..	D	D	D	D
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing .....mil lb..	D	D	D	D
33131600	Aluminum and aluminum-base alloy extruded shapes, including extruded rod, bar, pipe, tube, etc. ....mil lb..	9.1	10 073	1.3	1 653
33100011	All other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	-	X	D
33141101	Copper and copper-base alloy cathodes .....1,000 s tons..	2 517.7	1 144 923	1 167.3	957 116
33141113	Copper and copper-base alloy ingot, ingot bar, and wire bar .....1,000 s tons..	81.4	251 682	N	N
33141111	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	463.3	1 199 243	577.8	969 751
33141935	Magnesium and magnesium-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	D	D	D	D
33141925	Nickel and nickel-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	1.4	38 044	1.6	12 922
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	55.7	83 559	51.9	70 537
33141949	Tin and tin-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....mil lb..	4.8	12 897	<sup>P</sup> 1.5	4 439
33149101	Titanium and titanium-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	-	-	D	D
33141903	Precious metals and precious metal alloy shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 troy ounces..	66.6	26 222	D	D
33142101	Brass shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	D	D	131.6	340 510
33141921	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	37 475
00190021	Aluminum and aluminum-base alloy scrap (except home scrap) from other establishments of your company .....	D	D	D	D
00190022	Aluminum and aluminum-base alloy scrap (except home scrap) from all other sources .....	-	-	D	D
00190024	Copper and copper-base alloy scrap (except home scrap).....1,000 s tons..	564.3	1 292 901	679.9	1 372 146
00190080	Other nonferrous metal scrap (except home scrap).....1,000 s tons..	D	D	<sup>Q</sup> 17.1	20 137
00970099	All other materials and components, parts, containers, and supplies .....	X	192 007	X	224 631
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	53 757	X	131 927

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: <sup>P</sup> 10 to 19 percent estimated; <sup>Q</sup> 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive



stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331421 COPPER ROLLING, DRAWING, AND EXTRUDING**

This U.S. industry comprises establishments primarily engaged in (1) rolling, drawing, and/or extruding shapes (e.g., bar, plate, sheet, strip, tube (except bare or insulated copper communication or energy wire)) from purchased copper; and/or (2) recovering copper from scrap and rolling, drawing, and/or extruding shapes (e.g., bar, plate,

sheet, strip, tube (except bare or insulated copper communication or energy wire in integrated mills)).

The data published with NAICS code 331421 include the following SIC industry:

3351 Copper rolling and drawing

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.



The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F.

## Footnotes for Products Statistics and Materials Consumed by Kind

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### Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
\$ 3314211101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314211206 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

### Part 2. Materials Consumed by Kind (Table 7)

Not applicable.





1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3314219	33515	33515	3314921	33991 pt	33991 pt	331511A	33221	33221
3314219101	3351516	3351516	3314921101	3399166	3399166	331511A100	3322100	3322100
3314219211	3351536	3351536	3314921206	3399177	3399177	331511C	33222	33222
3314219306	3351518	3351518	3314921311	3399186	3399186	331511C300	3322200	3322200
3314219316	3351538	3351538	3314921416 pt	3399189 pt	3399187	331511E	33216	33216
3314219YVW	3351500	3351500	3314921416 pt	3399189 pt	3399188	331511E200	3321600	3321600
331421W	33510	33510	3314921426	3399191	3399191	331511W pt	33210	33210
331421WYWW	3351000	3351000	3314921431	3399198	3399198	331511W pt	33220	33220
331421WYWW	3351002	3351002	3314921YVW	3399100 pt	3399100 pt	331511W pt	33220	33220
3314221	33572	33572	3314923	33413	33413	331511WYWW pt	3321000	3321000
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3314221YVW	3357200	3357200	3314923221	3341399	3341399	3315120101	3324063	3324063
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3314223300 pt	3357402	3357500 pt	3314927	33414	33414	3315120216	3324067	3324067
3314223300 pt	3357400 pt	3357500 pt	3314927101 pt	3341431 pt	3341405	3315120311	3324066	3324066
331422W	33570 pt	33570 pt	3314927101 pt	3341431 pt	3341434	3315120YWW	3324000	3324000
331422WYWW	3357000 pt	3357000 pt	3314927101 pt	3341431 pt	3341444	3315120YWW	3324002	3324002
331422WYWW	3357002 pt	3357002 pt	3314927206	3341411	3341411	3315131	33252	33252
3314230 pt	33410 pt	33410 pt	3314927YVW	3341400	3341400	3315131101	3325211	3325211
3314230 pt	33412	33412	3314929	33415	33415	3315131206	3325215	3325215
3314230 pt	33990 pt	33990 pt	3314929101	3341525	3341525	3315131211	3325219	3325219
3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315131YVW	3325200	3325200
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3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133101	3325421	3325421
3314230206	3341226	3341226	331492A pt	33134 pt	33134 pt	3315133106	3325431	3325431
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3314230YVW pt	3341200	3341200	331492A101 pt	3341633	3341633	3315135101	3325551	3325551
3314230YVW pt	3399000 pt	3399000 pt	331492A106	3341635	3341635	3315135106	3325555	3325555
3314230YVW pt	3399100 pt	3399100 pt	331492A111	3341671	3341671	3315135111	3325559	3325559
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3314230YVW pt	3399002 pt	3399002 pt	331492A206	3313488	3313489 pt	331513W	33250	33250
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3314911101	3356161	3356161	331492AYVW pt	3313400 pt	3313400 pt	331513WYWW	3325002	3325002
3314911106	3356164	3356164	331492AYVW pt	3341600	3341600	3315210	33630	33630
3314911111	3356165	3356165	331492W pt	33130 pt	33130 pt	3315210000	3363000 pt	3363000 pt
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3314915100	3357300	3357300	3315111106	3321123	3321123	3315220YVW	3364002	3364002
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3314917400 pt	3357400 pt	3357500 pt	3315111201	3321121	3321121	3315240206	3365031	3365031
3314919	33563	33563	3315111YVW	3321100	3321100	3315240311	3365051	3365051
3314919101	3356381	3356381	3315113	33212	33212	3315240416	3365073	3365073
3314919106	3356383	3356383	3315113101	3321222	3321222	3315240421	3365061	3365061
3314919111	3356386	3356386	3315113206	3321224	3321224	3315240YVW	3365000	3365000
3314919116	3356391	3356391	3315113211	3321231	3321231	3315240YVW	3365002	3365002
3314919YVW	3356300	3356300	3315113216	3321233	3321233	3315250	33660	33660
331491C	33569	33569	3315113221	3321240	3321240	3315250101	3366020	3366020
331491C101	3356934	3356934	3315113YVW	3321200	3321200	3315250206	3366021	3366021
331491C106	3356951	3356951	3315115	33217	33217	3315250221	3366025	3366025
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331491C121	3356994	3356994	331515106	3321733	3321733	3315250416	3366024	3366024
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331491C216	3356993	3356993	3315151YVW	3321700	3321700	3315250536	3366041	3366041
331491CYVW	3356900	3356900	3315117	33218	33218	3315250541	3366051	3366051
331491E	33576	33576	3315117101	3321822	3321822	3315250546	3366061	3366061
331491E100	3357600	3357600	3315117106	3321824	3321824	3315250651	3366072	3366072
331491G	33577	33577	3315117111	3321827	3321827	3315250YVW	3366000	3366000
331491G100	3357700	3357700	3315117116	3321830	3321830	3315250YVW	3366002	3366002
331491W pt	33560	33560	3315117121	3321833	3321833	3315280	33690	33690
331491W pt	33570 pt	33570 pt	3315117126	3321836	3321836	3315280116	3369085	3369085
331491WYVW pt	3356000	3356000	3315117YVW	3321800	3321800	3315280201	3369011	3369011
331491WYVW pt	3357000 pt	3357000 pt	3315119	33219	33219	3315280206	3369015	3369015
331491WYVW pt	3356002	3356002	3315119101	3321931	3321931	3315280211	3369023	3369023
331491WYVW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099 pt
331491WYVW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099 pt
			3315119206	3321939	3321939	3315280YVW	3369000	3369000
			3315119YVW	3321900	3321900	3315280YVW	3369002	3369002



# Copper Wire (Except Mechanical) Drawing

1997

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EC97M-3314D

## 1997 Economic Census

*Manufacturing*

Industry Series



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*Helping You Make Informed Decisions*

U.S. Department of Commerce  
Economics and Statistics Administration  
U.S. CENSUS BUREAU



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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were



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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331422</b>	<b>Copper wire (except mechanical) drawing</b> .....	<b>33</b>	<b>36</b>	<b>4 692</b>	<b>131 549</b>	<b>3 528</b>	<b>7 354</b>	<b>87 746</b>	<b>367 742</b>	<b>664 240</b>	<b>1 029 653</b>	<b>43 613</b>
335720	Nonferrous wire drawing & insulating (pt) .....	N	36	4 692	131 549	3 528	7 354	87 746	367 742	664 240	1 029 653	43 613

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.  
<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331422, COPPER WIRE (EXCEPT MECHANICAL) DRAWING</b>												
<b>United States</b> .....	-	<b>36</b>	<b>27</b>	<b>4 692</b>	<b>131 549</b>	<b>3 528</b>	<b>7 354</b>	<b>87 746</b>	<b>367 742</b>	<b>664 240</b>	<b>1 029 653</b>	<b>43 613</b>
Massachusetts .....	-	8	8	668	22 749	457	970	13 700	31 070	106 338	137 791	8 728

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331422, COPPER WIRE (EXCEPT MECHANICAL) DRAWING</b>		<b>331422, COPPER WIRE (EXCEPT MECHANICAL) DRAWING—Con.</b>	
Companies <sup>1</sup> .....	number.. 33	Value added .....	\$1,000.. 367 742
All establishments .....	number.. 36	Total inventories, beginning of year .....	\$1,000.. 119 581
Establishments with 1 to 19 employees .....	number.. 9	Finished goods inventories, beginning of year .....	\$1,000.. 57 853
Establishments with 20 to 99 employees .....	number.. 14	Work-in-process inventories, beginning of year .....	\$1,000.. 30 222
Establishments with 100 employees or more .....	number.. 13	Materials and supplies inventories, beginning of year .....	\$1,000.. 31 506
All employees .....	number.. 4 692	Total inventories, end of year .....	\$1,000.. 133 944
Total compensation <sup>2</sup> .....	\$1,000.. 168 834	Finished goods inventories, end of year .....	\$1,000.. 59 503
Annual payroll .....	\$1,000.. 131 549	Work-in-process inventories, end of year .....	\$1,000.. 30 901
Total fringe benefits .....	\$1,000.. 37 285	Materials and supplies inventories, end of year .....	\$1,000.. 43 540
Production workers, average for year .....	number.. 3 528	Gross book value of total assets at beginning of year .....	\$1,000.. 316 916
Production workers on March 12 .....	number.. 3 457	Total capital expenditures (new and used) .....	\$1,000.. 43 613
Production workers on May 12 .....	number.. 3 527	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 9 807
Production workers on August 12 .....	number.. 3 523	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 33 806
Production workers on November 12 .....	number.. 3 605	Total retirements <sup>2</sup> .....	\$1,000.. 7 048
Production-worker hours .....	1,000.. 7 354	Gross book value of total assets at end of year .....	\$1,000.. 353 481
Production-worker wages .....	\$1,000.. 87 746	Total depreciation during year <sup>2</sup> .....	\$1,000.. 23 958
Total cost of materials .....	\$1,000.. 664 240	Total rental payments <sup>2</sup> .....	\$1,000.. 3 632
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 647 823	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 2 151
Cost of resales .....	\$1,000.. 2 575	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 1 481
Cost of fuels .....	\$1,000.. 2 007	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 1 386
Cost of purchased electricity .....	\$1,000.. 9 227	Response coverage ratio <sup>4</sup> .....	percent.. 59
Cost of contract work .....	\$1,000.. 2 608	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 7 239
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 160 468	Response coverage ratio <sup>4</sup> .....	percent.. 59
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 1 299
Total value of shipments .....	\$1,000.. 1 029 653	Response coverage ratio <sup>4</sup> .....	percent.. 59
Primary products value of shipments .....	\$1,000.. 821 276	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 1 804
Secondary products value of shipments .....	\$1,000.. 188 285	Response coverage ratio <sup>4</sup> .....	percent.. 59
Total miscellaneous receipts .....	\$1,000.. 20 092	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 584
Value of resales .....	\$1,000.. 2 381	Response coverage ratio <sup>4</sup> .....	percent.. 59
Contract receipts .....	\$1,000.. —	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 1 373
Other miscellaneous receipts .....	\$1,000.. 17 711	Response coverage ratio <sup>4</sup> .....	percent.. 59
Primary products specialization ratio .....	percent.. 81	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 624
Value of primary products shipments made in all industries .....	\$1,000.. 932 764	Response coverage ratio <sup>4</sup> .....	percent.. 59
Value of primary products shipments made in this industry .....	\$1,000.. 821 276	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 619
Value of primary products shipments made in other industries .....	\$1,000.. 111 488	Response coverage ratio <sup>4</sup> .....	percent.. 59
Coverage ratio .....	percent.. 88		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331422, COPPER WIRE (EXCEPT MECHANICAL) DRAWING</b>												
<b>All establishments</b> .....	-	36	27	4 692	131 549	3 528	7 354	87 746	367 742	664 240	1 029 653	43 613
Establishments with 1 to 4 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 5 to 9 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 10 to 19 employees .....	-	9	-	127	3 361	97	180	2 294	11 306	29 766	41 207	2 569
Establishments with 20 to 49 employees .....	-	5	5	128	4 488	98	182	2 580	36 860	23 612	60 810	2 374
Establishments with 50 to 99 employees .....	-	9	9	679	21 062	502	1 065	14 895	43 336	127 450	172 501	5 763
Establishments with 100 to 249 employees .....	-	7	7	1 210	33 605	817	1 713	21 968	73 697	164 207	236 138	9 848
Establishments with 250 to 499 employees .....	-	5	5	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	-	6	-	96	2 440	74	126	1 638	6 786	11 479	18 486	768

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331422</b>	<b>Copper wire (except mechanical) drawing</b> .....	<b>36</b>	<b>4 692</b>	<b>131 549</b>	<b>3 528</b>	<b>7 354</b>	<b>87 746</b>	<b>367 742</b>	<b>664 240</b>	<b>1 029 653</b>	<b>43 613</b>
3314221	Copper and copper-base alloy wire, strand, and cable for electrical transmission .....	36	4 692	131 549	3 528	7 354	87 746	367 742	664 240	1 029 653	43 613



**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331422</b>	<b>Copper wire (except mechanical) drawing</b>	N	X	X	932 764	N	X	X	N
3314221	Copper and copper-base alloy wire, strand, and cable for electrical transmission	N	X	X	932 764	N	X	X	604 251
33142211	Bare copper wire for electrical transmission	N	X	X	269 636	N	X	X	N
3314221101	Bare unalloyed copper wire for electrical transmission, made in nonferrous plants that draw wire \$ . . . . . 1,000 s tons . . . . .	13	P107.0	P96.4	233 650	18	188.5	95.6	222 553
3314221106	Bare alloyed copper wire for electrical transmission, made in nonferrous plants that draw wire \$ . . . . .	8	X	X	35 986	7	X	X	49 146
33142212	Other copper and copper-base alloy wire, strand, and cable	N	X	X	630 775	N	X	X	N
3314221211	Copper and copper-base alloy bare strand and cable for electrical transmission . . . . . 1,000 s tons . . . . .	12	83.9	86.9	293 104	11	126.4	114.0	257 633
3314221216	Other copper and copper-base alloy wire, strand, and cable for electrical transmission, including electrical wire rod . . . . .	29	X	X	337 671	12	X	X	27 339
3314221Y	Copper and copper-base alloy wire, strand, and cable for electrical transmission, nsk . . . . .	N	X	X	32 353	N	X	X	N
3314221YWW	Copper and copper-base alloy wire, strand, and cable for electrical transmission, nsk . . . . .	N	X	X	32 353	N	X	X	47 580
3314223	Copper wire cloth and woven wire products, made in nonferrous plants that draw wire . . . . .	N	X	X	-	N	X	X	N
33142233	Copper wire cloth and woven wire products, made in nonferrous plants that draw wire . . . . .	N	X	X	-	N	X	X	N
3314223300	Copper wire cloth and woven wire products, made in nonferrous plants that draw wire \$ . . . . .	-	X	X	-	N	X	X	N
331422W	Copper wire (except mechanical) drawing, nsk, total . . . . .	N	X	X	-	N	X	X	N
331422WY	Copper wire (except mechanical) drawing, nsk, total . . . . .	N	X	X	-	N	X	X	N
331422WYWW	Copper wire (except mechanical) drawing, nsk, for nonadministrative-record establishments . . . . .	N	X	X	-	N	X	X	N
331422WYWY	Copper wire (except mechanical) drawing, nsk, for administrative-record establishments . . . . .	N	X	X	-	N	X	X	N

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; 9 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3314221</b>	<b>COPPER AND COPPER-BASE ALLOY WIRE, STRAND, AND CABLE FOR ELECTRICAL TRANSMISSION</b>		
	United States . . . . .	<b>932 764</b>	<b>604 251</b>
	Arkansas . . . . .	85 508	N
	California . . . . .	41 725	11 965
	Illinois . . . . .	89 419	N
	Indiana . . . . .	104 437	64 575
	Massachusetts . . . . .	125 269	41 263
	New York . . . . .	172 553	212 641
	Texas . . . . .	84 813	N
<b>3314223</b>	<b>COPPER WIRE CLOTH AND WOVEN WIRE PRODUCTS, MADE IN NONFERROUS PLANTS THAT DRAW WIRE</b>		
	United States . . . . .	-	N

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331422</b>	<b>COPPER WIRE (EXCEPT MECHANICAL) DRAWING</b>				
33122200	Bare steel wire ..... 1,000 s tons..	D	D	N	N
33142127	Unalloyed copper and copper-base alloy rods ..... mil lb..	P210.1	236 238	N	N
33142129	Alloyed copper and copper-base alloy rods ..... mil lb..	D	D	N	N
33142119	Copper and copper-base alloy wire for redrawing ..... mil lb..	34.0	39 897	N	N
33100091	Bare copper and copper-base alloy wire, electrical (except wire for redrawing) ..... mil lb..	8.0	12 248	N	N
331000A5	Insulated copper wire and cable .....	X	59 286	X	N
33142147	All other copper and copper-base alloy shapes and forms including wire bar ..... mil lb..	47.2	70 559	N	N
33100079	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	103 026	X	N
32500029	All other chemicals and allied products ..... mil lb..	P43.6	43 314	N	N
00970099	All other materials and components, parts, containers, and supplies .....	X	58 882	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	-	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.



## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331422 COPPER WIRE (EXCEPT MECHANICAL) DRAWING**

This U.S. industry comprises establishments primarily engaged in drawing or drawing and insulating communication and energy wire and cable from purchased copper or in integrated secondary smelting and wire drawing plants.

The data published with NAICS code 331422 include the following SIC industry:

3357 Nonferrous wire drawing and insulating (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.



# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F.

## Footnotes for Products Statistics and Materials Consumed by Kind

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### Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
\$ 3314221101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314221106 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314223300 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

### Part 2. Materials Consumed by Kind (Table 7)

Not applicable.



1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3314219	33515	33515	3314921	33991 pt	33991 pt	331511A	33221	33221
3314219101	3351516	3351516	3314921101	3399166	3399166	331511A100	3322100	3322100
3314219211	3351536	3351536	3314921206	3399177	3399177	331511C	33222	33222
3314219306	3351518	3351518	3314921311	3399186	3399186	331511C300	3322200	3322200
3314219316	3351538	3351538	3314921416 pt	3399189 pt	3399187	331511E	33216	33216
3314219YVW	3351500	3351500	3314921416 pt	3399189 pt	3399188	331511E200	3321600	3321600
331421W	33510	33510	3314921426	3399191	3399191	331511W pt	33210	33210
331421WYWW	3351000	3351000	3314921431	3399198	3399198	331511W pt	33210	33210
331421WYWW	3351002	3351002	3314921YVW	3399100 pt	3399100 pt	331511W pt	33220	33220
3314221	33572	33572	3314923	33413	33413	331511WYWW pt	3321000	3321000
3314221101	3357211	3357211	3314923101	3341311	3341311	331511WYWW pt	3322000	3322000
3314221106	3357251	3357251	3314923206	3341321	3341321	331511WYWW pt	3321002	3321002
3314221211	3357271	3357271	3314923211	3341333	3341333	331511WYWW pt	3322002	3322002
3314221216	3357281	3357281	3314923216	3341351	3341351	3315120	33240	33240
3314221YVW	3357200	3357200	3314923221	3341399	3341399	3315120101	3324063	3324063
3314223	33574 pt	33575 pt	3314923YVW	3341300	3341300	3315120106	3324064	3324064
3314223300 pt	3357400	3357500 pt	3314927	33414	33414	3315120216	3324067	3324067
3314223300 pt	3357400 pt	3357500 pt	3314927101 pt	3341431 pt	3341405	3315120311	3324066	3324066
331422W	33570 pt	33570 pt	3314927101 pt	3341431 pt	3341434	3315120YVW	3324000	3324000
331422WYWW	3357000 pt	3357000 pt	3314927101 pt	3341431 pt	3341444	3315120YVW	3324002	3324002
331422WYVW	3357002 pt	3357002 pt	3314927206	3341411	3341411	3315131	33252	33252
3314230 pt	33410 pt	33410 pt	3314927YVW	3341400	3341400	3315131101	3325211	3325211
3314230 pt	33412	33412	3314929	33415	33415	3315131206	3325215	3325215
3314230 pt	33990 pt	33990 pt	3314929101	3341525	3341525	3315131211	3325219	3325219
3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315131YVW	3325200	3325200
3314230101	3341224	3341224	3314929211	3341545	3341545	3315133	33254	33254
3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133101	3325421	3325421
3314230206	3341226	3341226	331492A pt	33134 pt	33134 pt	3315133106	3325431	3325431
3314230311	3341231	3341231	331492A pt	33416	33416	3315133YVW	3325400	3325400
3314230YVW pt	3341000 pt	3341000 pt	331492A101 pt	3313417	3313415 pt	3315135	33255	33255
3314230YVW pt	3341200	3341200	331492A101 pt	3341633	3341633	3315135101	3325551	3325551
3314230YVW pt	3399000 pt	3399000 pt	331492A106	3341635	3341635	3315135106	3325555	3325555
3314230YVW pt	3399100 pt	3399100 pt	331492A111	3341671	3341671	3315135111	3325559	3325559
3314230YVW pt	3341002 pt	3341002 pt	331492A116	3341697	3341697	3315135YVW	3325500	3325500
3314230YVW pt	3399002 pt	3399002 pt	331492A206	3313488	3313488 pt	331513W	33250	33250
3314911	33561	33561	331492A311	3313499	3313498 pt	331513WYVW	3325000	3325000
3314911101	3356161	3356161	331492AYVW pt	3313400 pt	3313400 pt	331513WYVW	3325002	3325002
3314911106	3356164	3356164	331492AYVW pt	3341600	3341600	3315210	33630	33630
3314911111	3356165	3356165	331492W pt	33130 pt	33130 pt	3315210000	3363000 pt	3363000 pt
3314911116	3356166	3356166	331492W pt	33410 pt	33410 pt	3315210YVW	3363000 pt	3363000 pt
3314911YVW	3356100	3356100	331492WYVW pt	33990 pt	33990 pt	3315220	33640	33640
3314913	33562	33562	331492WYVW pt	3313000 pt	3313000 pt	3315220101	3364011	3364011
3314913101	3356272	3356272	331492WYVW pt	3341000 pt	3341000 pt	3315220206	3364021	3364021
3314913106	3356274	3356274	331492WYVW pt	3399000 pt	3399000 pt	3315220311	3364031	3364031
3314913111	3356279	3356279	331492WYVW pt	3313002 pt	3313002 pt	3315220416	3364041	3364041
3314913YVW	3356200	3356200	331492WYVW pt	3341002 pt	3341002 pt	3315220521	3364051	3364051
3314915	33573	33573	3315111	33211	33211	3315220YVW	3364000	3364000
3314915100	3357300	3357300	3315111106	3321123	3321123	3315220YVW	3364002	3364002
3314917	33574 pt	33575 pt	3315111111	3321125	3321125	3315240	33650	33650
3314917400 pt	3357405	3357500 pt	3315111116	3321126	3321126	3315240101	3365011	3365011
3314917400 pt	3357400 pt	3357500 pt	3315111201	3321121	3321121	3315240206	3365031	3365031
3314919	33563	33563	3315111YVW	3321100	3321100	3315240311	3365051	3365051
3314919101	3356381	3356381	3315113	33212	33212	3315240416	3365073	3365073
3314919106	3356383	3356383	3315113101	3321222	3321222	3315240421	3365061	3365061
3314919111	3356386	3356386	3315113206	3321224	3321224	3315240YVW	3365000	3365000
3314919116	3356391	3356391	3315113211	3321231	3321231	3315240YVW	3365002	3365002
3314919YVW	3356300	3356300	3315113216	3321233	3321233	3315250	33660	33660
331491C	33569	33569	3315113221	3321240	3321240	3315250101	3366020	3366020
331491C101	3356934	3356934	3315113YVW	3321200	3321200	3315250206	3366021	3366021
331491C106	3356951	3356951	3315115	33217	33217	3315250221	3366025	3366025
331491C111	3356957	3356957	331515101	3321731	3321731	3315250411	3366022	3366022
331491C121	3356994	3356994	331515106	3321733	3321733	3315250416	3366024	3366024
331491C126	3356996	3356996	331515111	3321735	3321735	3315250426	3366026	3366026
331491C131	3356997	3356997	331515116	3321736	3321736	3315250531	3366031	3366031
331491C216	3356993	3356993	3315151YVW	3321700	3321700	3315250536	3366041	3366041
331491CYVW	3356900	3356900	3315117	33218	33218	3315250541	3366051	3366051
331491E	33576	33576	3315117101	3321822	3321822	3315250546	3366061	3366061
331491E100	3357600	3357600	3315117106	3321824	3321824	3315250651	3366072	3366072
331491G	33577	33577	3315117111	3321827	3321827	3315250YVW	3366000	3366000
331491G100	3357700	3357700	3315117116	3321830	3321830	3315250YVW	3366002	3366002
331491W pt	33560	33560	3315117121	3321833	3321833	3315280	33690	33690
331491W pt	33570 pt	33570 pt	3315117126	3321836	3321836	3315280116	3369085	3369085
331491WYVW pt	3356000	3356000	3315117YVW	3321800	3321800	3315280201	3369011	3369011
331491WYVW pt	3357000 pt	3357000 pt	3315119	33219	33219	3315280206	3369015	3369015
331491WYVW pt	3356002	3356002	3315119101	3321931	3321931	3315280211	3369023	3369023
331491WYVW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099 pt
331491WYVW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099 pt
			3315119206	3321939	3321939	3315280YVW	3369000	3369000
			3315119YVW	3321900	3321900	3315280YVW	3369002	3369002



# Secondary Smelting, Refining, and Alloying of Copper

## 1997

Issued November 1999

EC97M-3314E

### 1997 Economic Census

*Manufacturing*

Industry Series



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**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director





**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.



**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331423</b>	<b>Secondary smelting, refining, &amp; alloying of copper</b> .....	<b>34</b>	<b>35</b>	<b>2 333</b>	<b>91 105</b>	<b>1 580</b>	<b>3 420</b>	<b>48 590</b>	<b>290 649</b>	<b>969 705</b>	<b>1 269 088</b>	<b>16 401</b>
334120	Secondary nonferrous metals (pt) .....	N	24	1 768	69 988	1 222	2 715	39 992	199 643	876 406	1 082 052	11 046
339930	Primary metal products, n.e.c. (pt) .....	N	11	565	21 117	358	705	8 598	91 006	93 299	187 036	5 355

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331423, SECONDARY SMELTING, REFINING, &amp; ALLOYING OF COPPER</b>												
<b>United States</b> .....	-	<b>35</b>	<b>29</b>	<b>2 333</b>	<b>91 105</b>	<b>1 580</b>	<b>3 420</b>	<b>48 590</b>	<b>290 649</b>	<b>969 705</b>	<b>1 269 088</b>	<b>16 401</b>
Illinois .....	-	5	5	678	28 717	473	1 086	15 415	90 308	375 170	468 218	5 893
New Jersey .....	-	3	3	207	7 983	130	267	3 706	48 547	27 129	75 394	1 156
Pennsylvania .....	-	5	5	457	15 600	302	643	10 032	50 359	287 316	340 862	2 223

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331423, SECONDARY SMELTING, REFINING, &amp; ALLOYING OF COPPER</b>		<b>331423, SECONDARY SMELTING, REFINING, &amp; ALLOYING OF COPPER—Con.</b>	
Companies <sup>1</sup> .....	number.. 34	Value added .....	\$1,000.. 290 649
All establishments .....	number.. 35	Total inventories, beginning of year .....	\$1,000.. 97 187
Establishments with 1 to 19 employees .....	number.. 6	Finished goods inventories, beginning of year .....	\$1,000.. 48 846
Establishments with 20 to 99 employees .....	number.. 21	Work-in-process inventories, beginning of year .....	\$1,000.. 17 527
Establishments with 100 employees or more .....	number.. 8	Materials and supplies inventories, beginning of year .....	\$1,000.. 30 814
All employees .....	number.. 2 333	Total inventories, end of year .....	\$1,000.. 89 858
Total compensation <sup>2</sup> .....	\$1,000.. 116 117	Finished goods inventories, end of year .....	\$1,000.. 41 662
Annual payroll .....	\$1,000.. 91 105	Work-in-process inventories, end of year .....	\$1,000.. 15 977
Total fringe benefits .....	\$1,000.. 25 012	Materials and supplies inventories, end of year .....	\$1,000.. 32 219
Production workers, average for year .....	number.. 1 580	Gross book value of total assets at beginning of year .....	\$1,000.. 262 053
Production workers on March 12 .....	number.. 1 592	Total capital expenditures (new and used) .....	\$1,000.. 16 401
Production workers on May 12 .....	number.. 1 572	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 2 770
Production workers on August 12 .....	number.. 1 570	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 13 631
Production workers on November 12 .....	number.. 1 586	Total retirements <sup>2</sup> .....	\$1,000.. 4 574
Production-worker hours .....	1,000.. 3 420	Gross book value of total assets at end of year .....	\$1,000.. 273 880
Production-worker wages .....	\$1,000.. 48 590	Total depreciation during year <sup>2</sup> .....	\$1,000.. 21 174
Total cost of materials .....	\$1,000.. 969 705	Total rental payments <sup>2</sup> .....	\$1,000.. 4 304
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 892 888	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 1 414
Cost of resales .....	\$1,000.. 51 565	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 2 890
Cost of fuels .....	\$1,000.. 8 815	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 585
Cost of purchased electricity .....	\$1,000.. 11 890	Response coverage ratio <sup>4</sup> .....	percent.. 57
Cost of contract work .....	\$1,000.. 4 547	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 7 104
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 191 838	Response coverage ratio <sup>4</sup> .....	percent.. 57
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 1 135
Total value of shipments .....	\$1,000.. 1 269 088	Response coverage ratio <sup>4</sup> .....	percent.. 57
Primary products value of shipments .....	\$1,000.. 1 108 007	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 851
Secondary products value of shipments .....	\$1,000.. 64 926	Response coverage ratio <sup>4</sup> .....	percent.. 57
Total miscellaneous receipts .....	\$1,000.. 96 155	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 725
Value of resales .....	\$1,000.. 86 274	Response coverage ratio <sup>4</sup> .....	percent.. 57
Contract receipts .....	\$1,000.. —	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 263
Other miscellaneous receipts .....	\$1,000.. 9 881	Response coverage ratio <sup>4</sup> .....	percent.. 57
Primary products specialization ratio .....	percent.. 94	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 309
Value of primary products shipments made in all industries .....	\$1,000.. 1 166 266	Response coverage ratio <sup>4</sup> .....	percent.. 57
Value of primary products shipments made in this industry .....	\$1,000.. 1 108 007	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 340
Value of primary products shipments made in other industries .....	\$1,000.. 58 259	Response coverage ratio <sup>4</sup> .....	percent.. 57
Coverage ratio .....	percent.. 95		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331423, SECONDARY SMELTING, REFINING, &amp; ALLOYING OF COPPER</b>												
All establishments .....	-	35	29	2 333	91 105	1 580	3 420	48 590	290 649	969 705	1 269 088	16 401
Establishments with 1 to 4 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 5 to 9 employees .....	-	2	-	D	D	D	D	D	D	D	D	D
Establishments with 10 to 19 employees .....	-	4	-	D	D	D	D	D	D	D	D	D
Establishments with 20 to 49 employees .....	-	12	12	453	15 950	341	729	10 575	51 406	103 504	155 499	4 512
Establishments with 50 to 99 employees .....	-	9	9	632	24 777	412	887	11 572	85 756	304 955	393 157	3 693
Establishments with 100 to 249 employees .....	-	8	8	1 178	47 626	781	1 707	25 109	143 740	547 176	696 425	7 409
Establishments with 250 to 499 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 500 to 999 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 1,000 to 2,499 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	-	-	-	-	-	-	-	-	-	-	-	-

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
331423	Secondary smelting, refining, & alloying of copper .....	35	2 333	91 105	1 580	3 420	48 590	290 649	969 705	1 269 088	16 401

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331423</b>	<b>Secondary copper</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>1 166 266</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3314230	Secondary smelting, refining, and alloying of copper	N	X	X	1 166 266	N	X	X	N
33142301	Secondary unalloyed copper cathode, wire bar, ingot, and ingot bar and copper and copper-base alloys powders, paste, and flakes	N	X	X	195 003	N	X	X	N
3314230101	Secondary unalloyed copper cathode, wire bar, ingot, and ingot bar \$	2	D	D	D	5	294.3	315.3	135 259
3314230106	Copper and copper-base alloy powders, paste, and flakes	18	X	D	D	24	X	54.1	123 638
33142302	Other secondary unalloyed copper, including cakes, slabs, shot, etc.	N	X	X	512 006	N	X	X	N
3314230206	Other secondary unalloyed copper, including cakes, slabs, shot, etc. \$	9	S	187.7	512 006	7	P280.8	P167.2	349 334
33142303	Secondary copper-base alloys	N	X	X	459 257	N	X	X	N
3314230311	Secondary copper-base alloys \$	20	S	S	459 257	17	S	S	346 373
3314230Y	Secondary smelting, refining, and alloying of copper, nsk, total	N	X	X	-	N	X	X	N
3314230YWW	Secondary smelting, refining, and alloying of copper, nsk, for nonadministrative-record establishments	N	X	X	-	N	X	X	N
3314230YWY	Secondary smelting, refining, and alloying of copper, nsk, for administrative-record establishments	N	X	X	-	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331423</b>	<b>SECONDARY SMELTING, REFINING, &amp; ALLOYING OF COPPER</b>				
33100009	All other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products)	X	1 104	X	N
33141103	Refined unalloyed copper (cathodes, ingots, cakes, slabs, etc.) and blister or anode copper	2.4	4 933	N	N
33100015	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products)	X	154 110	X	N
33141929	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products)	X	2 258	X	N
00190020	Aluminum and aluminum-base alloy scrap (excluding home scrap)	0.9	957	N	N
00190024	Copper and copper-base alloy scrap (except home scrap)	X	679 788	X	N
00190025	Lead and lead-base alloy scrap	X	952	X	N
00190026	Zinc and zinc-base alloy scrap (including drosses and skimmings)	X	1 717	X	N
00190052	All other nonferrous metal and metal-base alloy scrap	X	26 157	X	N
00970099	All other materials and components, parts, containers, and supplies	X	12 779	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	8 133	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.



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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331423 SECONDARY SMELTING, REFINING, AND ALLOYING OF COPPER**

This U.S. industry comprises establishments primarily engaged in (1) recovering copper and copper alloys from scrap and/or (2) alloying purchased copper. Establishments in this industry make primary forms, such as ingot, wire bar, cake, and slab from copper or copper alloys, such as brass and bronze.

The data published with NAICS code 331423 include the following SIC industries:

- 3341 Secondary nonferrous metals (pt)
- 3399 Primary metal products, n.e.c. (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic



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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F.

## Footnotes for Products Statistics and Materials Consumed by Kind

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### Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
\$ 3314230101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314230206 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314230311 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

### Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

# Appendix G.

## Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33111111	33121 pt	33121 pt	3312223	33152 pt	33152 pt	3313161	33541	33541
3311111101	331215	3312111 pt	3312223101	3315251	3315201 pt	3313161101	3354115	3354115
3311111103	3312116	3312112 pt	3312223103	3315252	3315203 pt	3313161206	3354118	3354118
3311111105	3312153	3312151 pt	3312223105	3315253	3315205 pt	3313161311	3354125	3354125
3311111107	3312173	3312171 pt	3312223107	3315254	3315207 pt	3313161416	3354128	3354128
3311111109 pt	3312196 pt	3312131 pt	3312223109	3315255	3315209 pt	3313161YVW	3354100	3354100
3311111109 pt	3312196 pt	3312197 pt	3312223111 pt	3315214 pt	3315210 pt	3313163	33542	33542
3311111111	3312191	3312191	3312223113	3315256	3315216 pt	3313163101	3354261	3354261
3311111113	3312192	3312192	3312223122	3315257	3315222 pt	3313163106	3354263	3354263
3311111115 pt	3312195 pt	3312193	3312223124	3315258	3315223 pt	3313163YVW	3354200	3354200
3311111115 pt	3312195 pt	3312194	3312223126	3315259	3315225 pt	331316W	33540	33540
3311111117	3312198	3312198	3312223128	3315260	3315230 pt	331316WYVW	3354000	3354000
3311111YVW	3312100 pt	3312100 pt	3312223YVW	3315200 pt	3315200 pt	331316WYVW	3354002	3354002
3311112	33991 pt	33991 pt	3312225	33155	33155	3313191	33551	33551
3311112100 pt	3399100 pt	3399100 pt	3312225100	3315500	3315500	3313191100	3355100	3355100
3311112100 pt	3399155	3399155	3312227	33156	33156	3313193	33552	33552
3311113	33122	33122	3312227101	3315613	3315613	3313193100 pt	3355200 pt	3355200
3311113100	3312200	3312200	3312227110	3315621	3315621	3313193100 pt	3355200 pt	3355222
3311115	33123	33123	3312227112 pt	3315640 pt	3315635	3313193100 pt	3355200 pt	3355225
3311115100	3312300	3312300	3312227112 pt	3315640 pt	3315671	3313197	33571	33571
3311117	33124	33124	3312227YVW	3315600	3315600	3313197100	3357100	3357100
3311117100	3312400	3312400	3312229	33157	33157	3313199	33553	33553
3311119	33125	33125	3312229100	3315700	3315700	3313199100	3355300	3355300
3311119100	3312500	3312500	331222B	33159	33159	331319A	33574 pt	33575 pt
331111B	33126	33126	331222B110	3315951	3315951	331319A100 pt	3357401	3357500 pt
331111B100	3312600	3312600	331222B120	3315955	3315955	331319A100 pt	3357400 pt	3357500 pt
331111D	33127	33127	331222B122	3315963	3315963	331319C	33554	33554
331111D100	3312700	3312700	331222B124	3315971	3315971	331319C100	3355400	3355400
331111F	33128	33128	331222B126 pt	3315998 pt	3315984	331319W pt	33550	33550
331111F100	3312800	3312800	331222B126 pt	3315998 pt	3315973	331319W pt	33570 pt	33570 pt
331111H	3312A	3312A	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3355000	3355000
331111H101	3312A17	3312A17	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3357000 pt	3357000 pt
331111H203	3312A26	3312A26	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3355002	3355002
331111HYVW	3312A00	3312A00	331222BYVW	3315900	3315900	331319WYVW pt	3357002 pt	3357002 pt
331111J	3312B	3312B	331222W	331500 pt	331500 pt	3314110 pt	33310	33310
331111J101	3312B62	3312B62	331222WYVW	3315000 pt	3315000 pt	3314110 pt	33311	33311
331111J203	3312B66	3312B66	331222WYVW	3315002 pt	3315002 pt	3314110 pt	33312	33312
331111JYVW	3312B00	3312B00	3313110 pt	28190 pt	28190 pt	3314110101	3331100	3331100
331111L	3312C	3312C	3313110 pt	28195	28195	3314110106	3331217	3331217
331111L100	3312C00	3312C00	3313110 pt	2819500	2819500	3314110111	3331230	3331230
331111W pt	33120 pt	33120 pt	3313110YVW	2819000 pt	2819000 pt	3314110YVW pt	3331000	3331000
331111W pt	33990 pt	33990 pt	3313110YVW	2819002 pt	2819002 pt	3314110YVW pt	3331200	3331200
331111WYVW pt	3312000 pt	3312000 pt	3313121	33347	33347	3314110YVW	3331002	3331002
331111WYVW pt	3399000 pt	3399000 pt	3313121100	3334700	3334700	3314191	33391	33391
331111WYVW pt	3312002 pt	3312002 pt	3313123	33348	33348	3314191100	3339100	3339100
331111WYVW pt	3399002 pt	3399002 pt	3313123100	3334800	3334800	3314193	33392	33392
3311121	33132	33132	331312W	33340	33340	3314193101 pt	3339231 pt	3339234
3311121100	3313200	3313200	331312WYVW	3334000	3334000	3314193101 pt	3339231 pt	3339244
3311123	33133	33133	331312WYVW	3334002	3334002	3314193101 pt	3339231 pt	3339255
3311123100	3313300	3313300	3313141	33417	33417	3314193111	3339251	3339251
3311125	33134 pt	33134 pt	3313141100	3341700	3341700	3314193YVW	3339200	3339200
3311125101	3313416	3313415 pt	3313143	33418	33418	3314197	33395	33395
3311125203 pt	3313487 pt	3313408	3313143100	3341800	3341800	3314197101	3339525	3339525
3311125203 pt	3313487 pt	3313489 pt	3313145	33991 pt	33991 pt	3314197206	3339535	3339535
3311125305	3313497	3313498 pt	3313145100	3399111	3399111	3314197311	3339545	3339545
3311125YVW	3313400 pt	3313400 pt	331314W pt	33410 pt	33410 pt	3314197YVW	3339500	3339500
331112W	33130 pt	33130 pt	331314W pt	33990 pt	33990 pt	3314199	33398	33398
331112WYVW	3313000 pt	3313000 pt	331314WYVW pt	3341000 pt	3341000 pt	3314199101	3339805	3339805
331112WYVW	3313002 pt	3313002 pt	331314WYVW pt	3399000 pt	3399000 pt	3314199103	3339833	3339833
3312100	33170	33170	331314WYVW pt	3341002 pt	3341002 pt	3314199106 pt	3339851 pt	3339843
3312100100	3317000 pt	3317000 pt	331314WYVW pt	3399002 pt	3399002 pt	3314199106 pt	3339851 pt	3339863
3312100YVW	3317000 pt	3317000 pt	3313151	33531	33531	3314199121	3339873	3339873
3312100YVW	3317002	3317000 pt	3313151101	3353113	3353113	3314199126 pt	3339889 pt	3339889
3312121	33167	33167	3313151106	3353115	3353115	3314199126 pt	3339889 pt	3339889
3312121100	3316700	3316700	3313151YVW	3353100	3353100	3314199131	3339899	3339899
3312213	33168	33168	3313153	33532	33532	3314199YVW	3339800	3339800
3312213100	3316800	3316800	3313153101	3353223	3353223	331419WYVW	3339000	3339000
331221W	33160	33160	3313153106	3353225	3353225	331419WYVW	3339002	3339002
331221WYVW	3316000	3316000	3313153211	3353227	3353227	3314211	33511	33511
331221WYVW	3316002	3316002	3313153216	3353231	3353231	3314211101	3351111	3351111
3312221	33151	33151	3313153221	3353233	3353233	3314211206	3351131	3351131
3312221110	3315113	3315113	3313153YVW	3353200	3353200	3314211YVW	3351100	3351100
3312221112	3315115	3315115	3313155	33533	33533	3314213	33513	33513
3312221214	3315125	3315125	3313155100	3353300	3353300	3314213101	3351311	3351311
3312221222	3315134	3315134	331315W	3353000 pt	3353000 pt	3314213206	3351332	3351332
3312221YVW	3315100	3315100	331315WYVW	3353002 pt	3353002 pt	3314213YVW	3351300	3351300
			331315WYVW	3353000 pt	3353000 pt			
			331315WYVW	3353002 pt	3353002 pt			

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3314219	33515	33515	3314921	33991 pt	33991 pt	331511A	33221	33221
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3314219YVW	3351500	3351500	3314921416 pt	3399189 pt	3399188	331511E200	3321600	3321600
331421W	33510	33510	3314921426	3399191	3399191	331511W pt	33210	33210
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331421WYWW	3351002	3351002	3314921YVW	3399100 pt	3399100 pt	331511W pt	33220	33220
3314221	33572	33572	3314923	33413	33413	331511WYWW pt	3321000	3321000
3314221101	3357211	3357211	3314923101	3341311	3341311	331511WYWW pt	3322000	3322000
3314221106	3357251	3357251	3314923206	3341321	3341321	331511WYWW pt	3321002	3321002
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3314221YVW	3357200	3357200	3314923221	3341399	3341399	3315120101	3324063	3324063
3314223	33574 pt	33575 pt	3314923YVW	3341300	3341300	3315120106	3324064	3324064
3314223300 pt	3357402	3357500 pt	3314927	33414	33414	3315120216	3324067	3324067
3314223300 pt	3357400 pt	3357500 pt	3314927101 pt	3341431 pt	3341405	3315120311	3324066	3324066
331422W	33570 pt	33570 pt	3314927101 pt	3341431 pt	3341434	3315120YVW	3324000	3324000
331422WYWW	3357000 pt	3357000 pt	3314927101 pt	3341431 pt	3341444	3315120YVW	3324002	3324002
331422WYWW	3357002 pt	3357002 pt	3314927206	3341411	3341411	3315131	33252	33252
3314230 pt	33410 pt	33410 pt	3314927YVW	3341400	3341400	3315131101	3325211	3325211
3314230 pt	33412	33412	3314929	33415	33415	3315131206	3325215	3325215
3314230 pt	33990 pt	33990 pt	3314929101	3341525	3341525	3315131211	3325219	3325219
3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315131YVW	3325200	3325200
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3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133101	3325421	3325421
3314230206	3341226	3341226	331492A pt	33134 pt	33134 pt	3315133106	3325431	3325431
3314230311	3341231	3341231	331492A pt	33416	33416	3315133YVW	3325400	3325400
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3314230YVW pt	3399002 pt	3399002 pt	331492A206	3313488	3313489 pt	331513W	33250	33250
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3314919101	3356381	3356381	3315113	33212	33212	3315240416	3365073	3365073
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3314919YVW	3356300	3356300	3315113216	3321233	3321233	3315250	33660	33660
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331491E	33576	33576	3315117101	3321822	3321822	3315250546	3366061	3366061
331491E100	3357600	3357600	3315117106	3321824	3321824	3315250651	3366072	3366072
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331491G100	3357700	3357700	3315117116	3321830	3321830	3315250YVW	3366002	3366002
331491W pt	33560	33560	3315117121	3321833	3321833	3315280	33690	33690
331491W pt	33570 pt	33570 pt	3315117126	3321836	3321836	3315280116	3369085	3369085
331491WYVW pt	3356000	3356000	3315117YVW	3321800	3321800	3315280201	3369011	3369011
331491WYVW pt	3357000 pt	3357000 pt	3315119	33219	33219	3315280206	3369015	3369015
331491WYVW pt	3356002	3356002	3315119101	3321931	3321931	3315280211	3369023	3369023
331491WYVW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099
331491WYVW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099
			3315119206	3321939	3321939	3315280YVW	3369000	3369000
			3315119YVW	3321900	3321900			



# Nonferrous Metal (Except Copper and Aluminum) Rolling, Drawing, and Extruding

# 1997

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EC97M-3314F

## 1997 Economic Census

*Manufacturing*

Industry Series



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*Helping You Make Informed Decisions*

U.S. Department of Commerce  
Economics and Statistics Administration  
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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331491</b>	<b>Other nonferrous metal rolling, drawing, &amp; extruding</b>	<b>219</b>	<b>267</b>	<b>25 872</b>	<b>989 708</b>	<b>18 905</b>	<b>40 978</b>	<b>652 624</b>	<b>3 124 646</b>	<b>4 149 661</b>	<b>7 315 249</b>	<b>249 555</b>
335600	Nonferrous rolling & drawing, n.e.c.	N	184	17 237	709 102	11 954	26 389	452 680	2 337 456	2 470 501	4 839 547	158 970
335730	Nonferrous wire drawing & insulating (pt)	N	83	8 635	280 606	6 951	14 589	199 944	787 190	1 679 160	2 475 702	90 585

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331491, OTHER NONFERROUS METAL ROLLING, DRAWING, &amp; EXTRUDING</b>												
<b>United States</b>	-	<b>267</b>	<b>168</b>	<b>25 872</b>	<b>989 708</b>	<b>18 905</b>	<b>40 978</b>	<b>652 624</b>	<b>3 124 646</b>	<b>4 149 661</b>	<b>7 315 249</b>	<b>249 555</b>
California	-	21	10	1 427	41 676	1 112	2 345	25 445	135 803	145 746	289 559	7 298
Florida	7	8	4	164	4 820	110	169	2 586	13 385	18 397	31 935	1 031
Indiana	-	21	17	3 023	119 109	2 410	5 024	84 102	210 324	631 956	851 769	27 204
Michigan	3	11	7	443	16 484	313	640	9 879	48 575	93 630	139 015	4 525
New Jersey	4	17	8	1 149	50 064	840	1 739	32 371	50 529	154 533	267 298	6 525
New York	1	12	7	1 016	41 903	652	1 472	25 561	114 166	165 547	274 007	5 292
Ohio	-	14	11	1 840	82 526	1 304	3 339	56 711	287 887	271 054	555 850	16 540
Pennsylvania	3	24	15	1 597	57 665	1 042	2 310	34 759	139 642	209 860	342 868	24 929
Rhode Island	1	11	6	722	20 833	566	1 176	15 804	13 350	145 327	168 166	5 875
Tennessee	-	5	5	756	27 444	558	1 163	17 752	97 580	229 253	330 924	3 562
Texas	-	12	5	442	13 117	301	635	7 759	119 218	89 095	205 718	7 885
Washington	-	7	4	1 025	35 697	803	1 598	23 693	260 896	120 204	386 670	10 720

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331491, OTHER NONFERROUS METAL ROLLING, DRAWING, &amp; EXTRUDING</b>		<b>331491, OTHER NONFERROUS METAL ROLLING, DRAWING, &amp; EXTRUDING—Con.</b>	
Companies <sup>1</sup> .....	number.. 219	Value added .....	\$1,000.. 3 124 646
All establishments .....	number.. 267	Total inventories, beginning of year .....	\$1,000.. 1 415 505
Establishments with 1 to 19 employees .....	number.. 99	Finished goods inventories, beginning of year .....	\$1,000.. 302 051
Establishments with 20 to 99 employees .....	number.. 100	Work-in-process inventories, beginning of year .....	\$1,000.. 781 092
Establishments with 100 employees or more .....	number.. 68	Materials and supplies inventories, beginning of year .....	\$1,000.. 332 362
All employees .....	number.. 25 872	Total inventories, end of year .....	\$1,000.. 1 422 678
Total compensation <sup>2</sup> .....	\$1,000.. 1 277 384	Finished goods inventories, end of year .....	\$1,000.. 309 152
Annual payroll .....	\$1,000.. 989 708	Work-in-process inventories, end of year .....	\$1,000.. 733 049
Total fringe benefits .....	\$1,000.. 287 676	Materials and supplies inventories, end of year .....	\$1,000.. 380 477
Production workers, average for year .....	number.. 18 905	Gross book value of total assets at beginning of year .....	\$1,000.. 2 996 243
Production workers on March 12 .....	number.. 18 706	Total capital expenditures (new and used) .....	\$1,000.. 249 555
Production workers on May 12 .....	number.. 18 773	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 28 394
Production workers on August 12 .....	number.. 18 954	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 221 161
Production workers on November 12 .....	number.. 19 187	Total retirements <sup>2</sup> .....	\$1,000.. 62 445
Production-worker hours .....	1,000.. 40 978	Gross book value of total assets at end of year .....	\$1,000.. 3 183 353
Production-worker wages .....	1,000.. 652 624	Total depreciation during year <sup>2</sup> .....	\$1,000.. 169 413
Total cost of materials .....	\$1,000.. 4 149 661	Total rental payments <sup>2</sup> .....	\$1,000.. 28 861
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 3 747 641	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 10 793
Cost of resales .....	\$1,000.. 63 370	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 18 068
Cost of fuels .....	\$1,000.. 71 902	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 28 864
Cost of purchased electricity .....	\$1,000.. 111 110	Response coverage ratio <sup>4</sup> .....	percent.. 82
Cost of contract work .....	\$1,000.. 155 638	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 61 703
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 2 327 186	Response coverage ratio <sup>4</sup> .....	percent.. 82
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. D	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 7 961
Total value of shipments .....	\$1,000.. 7 315 249	Response coverage ratio <sup>4</sup> .....	percent.. 82
Primary products value of shipments .....	\$1,000.. 6 603 520	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 6 507
Secondary products value of shipments .....	\$1,000.. 353 554	Response coverage ratio <sup>4</sup> .....	percent.. 82
Total miscellaneous receipts .....	\$1,000.. 358 175	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 3 239
Value of resales .....	\$1,000.. 100 777	Response coverage ratio <sup>4</sup> .....	percent.. 82
Contract receipts .....	\$1,000.. 179 921	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 6 871
Other miscellaneous receipts .....	\$1,000.. 77 477	Response coverage ratio <sup>4</sup> .....	percent.. 82
Primary products specialization ratio .....	percent.. 94	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 8 068
Value of primary products shipments made in all industries .....	\$1,000.. 7 122 970	Response coverage ratio <sup>4</sup> .....	percent.. 82
Value of primary products shipments made in this industry .....	\$1,000.. 6 603 520	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 10 282
Value of primary products shipments made in other industries .....	\$1,000.. 519 450	Response coverage ratio <sup>4</sup> .....	percent.. 82
Coverage ratio .....	percent.. 92		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331491. OTHER NONFERROUS METAL ROLLING, DRAWING, &amp; EXTRUDING</b>												
<b>All establishments</b> .....	-	267	168	25 872	989 708	18 905	40 978	652 624	3 124 646	4 149 661	7 315 249	249 555
Establishments with 1 to 4 employees .....	8	42	-	92	2 890	73	145	1 914	7 257	11 906	19 285	829
Establishments with 5 to 9 employees .....	5	25	-	163	5 260	116	211	3 132	19 666	22 109	41 645	2 593
Establishments with 10 to 19 employees .....	7	32	-	447	13 608	316	537	8 057	37 676	42 590	80 951	1 972
Establishments with 20 to 49 employees .....	2	55	55	1 871	65 862	1 331	2 586	35 801	189 876	318 783	505 071	29 668
Establishments with 50 to 99 employees .....	1	45	45	3 287	122 379	2 266	4 890	66 618	366 115	566 671	936 972	26 221
Establishments with 100 to 249 employees .....	-	43	43	6 966	236 210	5 472	11 394	161 640	627 260	1 150 318	1 833 811	67 759
Establishments with 250 to 499 employees .....	1	15	15	5 084	201 341	3 758	8 494	145 682	437 528	880 576	1 336 369	51 258
Establishments with 500 to 999 employees .....	-	7	7	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	3	3	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	68	-	461	12 855	328	510	8 038	37 111	46 011	83 233	2 174

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331491</b>	<b>Other nonferrous metal rolling, drawing, &amp; extruding</b> .....	<b>267</b>	<b>25 872</b>	<b>989 708</b>	<b>18 905</b>	<b>40 978</b>	<b>652 624</b>	<b>3 124 646</b>	<b>4 149 661</b>	<b>7 315 249</b>	<b>249 555</b>
3314911	Nickel and nickel-base alloy mill shapes, including nickel-copper alloys .....	16	4 583	196 414	3 370	7 195	132 334	697 170	662 540	1 332 860	41 218
3314913	Titanium and titanium-base alloy mill shapes, excluding wire .....	15	3 509	157 369	2 466	5 558	101 570	596 947	620 561	1 212 498	25 932
3314915	Bare nonferrous metal wire (except aluminum and copper), made in nonferrous plants that draw wire .....	14	1 049	43 804	822	1 838	29 588	140 353	176 989	314 699	6 160
3314919	Precious metal mill shapes .....	17	2 143	93 363	1 529	3 336	53 911	126 926	383 885	600 103	23 398
331491C	All other nonferrous metal mill shapes .....	50	4 492	174 044	2 789	6 554	101 868	485 159	549 138	1 010 277	42 596
331491E	Apparatus wire and cord and flexible cord sets (except wiring harnesses), made in plants that draw wire .....	29	3 836	100 316	3 054	6 126	67 464	271 865	474 837	754 144	18 375
331491G	Magnet wire, made in plants that draw wire .....	24	3 581	131 053	2 940	6 348	99 255	360 023	1 002 057	1 366 098	64 228

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331491</b>	<b>Other rolled, drawn, extruded, or alloyed nonferrous products</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>7 122 970</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3314911	Nickel and nickel-base alloy mill shapes, including nickel-copper alloys	N	X	X	1 070 203	N	X	X	682 277
33149111	Nickel and nickel-base alloy plate, sheet, strip, and wire	N	X	X	899 346	N	X	X	N
3314911101	Nickel and nickel-base alloy plate, sheet, and strip, excluding nickel-copper alloys	1,000 s tons	13	S	332 036	11	111.9	17.7	242 846
3314911106	Other nickel and nickel-base alloy mill shapes, excluding nickel-copper alloys and wire	1,000 s tons	10	D	441 314	10	S	22.8	379 618
3314911111	Nickel-copper alloy mill shapes and forms (except wire)	1,000 s tons	6	D	67 111	7	101.5	1.7	21 707
3314911116	Nickel and nickel alloy wire, made in rolling mills \$	1,000 s tons	7	D	8.6 58 885	6	S	3.5	38 106
3314911Y	Nickel and nickel-base alloy mill shapes, including nickel-copper alloys, nsk	N	X	X	170 857	N	X	X	N
3314911YWV	Nickel and nickel-base alloy mill shapes, including nickel-copper alloys, nsk	N	X	X	170 857	N	X	X	N
3314913	Titanium and titanium-base alloy mill shapes, excluding wire	N	X	X	1 413 131	N	X	X	501 600
33149131	Titanium and titanium-base alloy mill shapes, excluding wire	N	X	X	1 407 559	N	X	X	N
3314913101	Titanium and titanium-base alloy ingot	1,000 s tons	6	S	P33.1 488 581	6	14.9	14.8	124 880
3314913106	Forging and extrusion titanium and titanium-alloy ingot (billet)	1,000 s tons	6	S	S 231 119	6	P11.4	9.6	145 718
3314913111	Other titanium and titanium-base alloy mill shapes, including sheet, plate, tubing, bar, etc., excluding wire	1,000 s tons	21	S	S 687 859	15	9.7	6.2	221 134
3314913Y	Titanium and titanium-base alloy mill shapes, excluding wire, nsk	N	X	X	5 572	N	X	X	N
3314913YWV	Titanium and titanium-base alloy mill shapes, excluding wire, nsk	N	X	X	5 572	N	X	X	9 868
3314915	Bare nonferrous metal wire (except aluminum and copper), made in nonferrous plants that draw wire	N	X	X	283 252	N	X	X	173 895
33149151	Bare nonferrous metal wire (except aluminum and copper), made in nonferrous plants that draw wire	N	X	X	283 252	N	X	X	N
3314915100	Bare nonferrous metal wire (except aluminum and copper), made in nonferrous plants that draw wire \$	13	X	X	283 252	16	X	X	173 895
3314917	Nonferrous wire cloth and woven wire products, made in nonferrous plants that draw wire	N	X	X	D	N	X	X	N
33149174	Nonferrous wire cloth and woven wire products, made in nonferrous plants that draw wire	N	X	X	D	N	X	X	N
3314917400	Nonferrous wire cloth and woven wire products, made in nonferrous plants that draw wire \$	1	X	X	D	N	X	X	N
3314919	Precious metal mill shapes	N	X	X	643 234	N	X	X	636 775
33149191	Other precious metal mill shapes, including platinum group metals, including wire	N	X	X	572 305	N	X	X	N
3314919101	Gold mill shapes, excluding wire	12	X	X	194 005	10	X	X	139 591
3314919106	Silver mill shapes, excluding wire	12	X	X	181 668	9	X	X	136 368
3314919111	Other precious metal mill shapes, including platinum-group metals, excluding wire	7	X	X	88 175	6	X	X	151 414
3314919116	Precious metal wire, made in rolling mills \$	7	X	X	108 457	9	X	X	81 241
3314919Y	Precious metal mill shapes, nsk	N	X	X	70 929	N	X	X	N
3314919YWV	Precious metal mill shapes, nsk	N	X	X	70 929	N	X	X	128 161
331491C	All other nonferrous metal mill shapes	N	X	X	D	N	X	X	752 174
331491C1	Other nonferrous metal rolled, drawn, and extruded shapes, including zinc, excluding wire	N	X	X	590 767	N	X	X	N
331491C101	Magnesium and magnesium-base alloy mill shapes, excluding wire	1,000 s tons	3	D	D	7	24.6	20.9	73 320
331491C106	Lead and lead-base alloy plate, sheet, and strip, excluding wire	1,000 s tons	7	S	S 57 752	4	S	11.6	10 538
331491C111	Other rolled, drawn, or extruded lead and lead-base alloy mill shapes, including pipe, tubing, traps, and bends, excluding wire	6	X	X	53 430	13	X	X	66 199
331491C121	Tungsten and tungsten-base alloy mill shapes, excluding wire	4	X	X	10 977	4	X	X	6 951
331491C126	Molybdenum and molybdenum-base alloy mill shapes, excluding wire	4	X	X	41 830	4	X	X	24 010
331491C131	Other nonferrous metals, rolled, drawn, and extruded shapes, including zinc, excluding wire	28	X	X	358 246	27	X	X	326 098

See footnotes at end of table.

**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331491</b>	<b>Other rolled, drawn, extruded, or alloyed nonferrous products—Con.</b>								
331491C	All other nonferrous metal mill shapes—Con.								
331491C2	Other nonferrous wire (except copper, aluminum, nickel, and precious metals) .....	N	X	X	222 984	N	X	X	N
331491C216	Other nonferrous wire (except copper, aluminum, nickel, and precious metals), made in rolling mills \$ .....	22	X	X	222 984	16	X	X	182 782
331491CY	All other nonferrous metal mill shapes, nsk .....	N	X	X	39 349	N	X	X	N
331491CYWV	All other nonferrous metal mill shapes, nsk .....	N	X	X	39 349	N	X	X	62 276
331491E	Apparatus wire and cord and flexible cord sets (except wiring harnesses), made in plants that draw wire @ .....	N	X	X	912 502	N	X	X	757 221
331491E1	Apparatus wire and cord and flexible cord sets (except wiring harnesses), made in plants that draw wire .....	N	X	X	912 502	N	X	X	N
331491E100	Apparatus wire and cord and flexible cord sets (except wiring harnesses), made in plants that draw wire \$ .....	42	X	X	912 502	43	X	X	757 221
331491G	Magnet wire, made in plants that draw wire @ .....	N	X	X	1 255 785	N	X	X	999 929
331491G1	Magnet wire, made in plants that draw wire .....	N	X	X	1 255 785	N	X	X	N
331491G100	Magnet wire, made in plants that draw wire .....	17	X	X	1 255 785	26	X	X	999 929
331491W	Other rolled, drawn, extruded, or alloyed nonferrous products, nsk, total .....	N	X	X	690 452	N	X	X	N
331491WY	Other rolled, drawn, extruded, or alloyed nonferrous products, nsk, total .....	N	X	X	690 452	N	X	X	N
331491WYWW	Other rolled, drawn, extruded, or alloyed nonferrous products, nsk, for nonadministrative-record establishments .....	N	X	X	564 595	N	X	X	N
331491WYWY	Other rolled, drawn, extruded, or alloyed nonferrous products, nsk, for administrative-record establishments .....	N	X	X	125 857	N	X	X	N

# Additional information is available for this item: see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3314911</b>	<b>NICKEL AND NICKEL-BASE ALLOY MILL SHAPES, INCLUDING NICKEL-COPPER ALLOYS</b>		
	United States .....	<b>1 070 203</b>	<b>682 277</b>
	Pennsylvania .....	30 601	18 448
<b>3314913</b>	<b>TITANIUM AND TITANIUM-BASE ALLOY MILL SHAPES, EXCLUDING WIRE</b>		
	United States .....	<b>1 413 131</b>	<b>501 600</b>
	Pennsylvania .....	92 760	N
	Washington .....	89 725	N
<b>3314915</b>	<b>BARE NONFERROUS METAL WIRE (EXCEPT ALUMINUM AND COPPER), MADE IN NONFERROUS PLANTS THAT DRAW WIRE</b>		
	United States .....	<b>283 252</b>	<b>173 895</b>
	Pennsylvania .....	54 479	N
<b>3314917</b>	<b>NONFERROUS WIRE CLOTH AND WOVEN WIRE PRODUCTS, MADE IN NONFERROUS PLANTS THAT DRAW WIRE</b>		
	United States .....	<b>D</b>	<b>N</b>

See footnotes at end of table.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3314919</b>	<b>PRECIOUS METAL MILL SHAPES</b>		
	<b>United States</b> .....	<b>643 234</b>	<b>636 775</b>
	California .....	57 220	N
	Rhode Island .....	48 751	60 057
<b>331491C</b>	<b>ALL OTHER NONFERROUS METAL MILL SHAPES</b>		
	<b>United States</b> .....	<b>D</b>	<b>752 174</b>
	California .....	33 325	N
	Illinois .....	93 297	65 452
	New Jersey .....	52 750	23 419
	Ohio .....	35 419	16 003
	Pennsylvania .....	96 243	158 792
	Texas .....	52 273	12 832
	Washington .....	33 958	49 520
<b>331491E</b>	<b>APPARATUS WIRE AND CORD AND FLEXIBLE CORD SETS (EXCEPT WIRING HARNESSSES), MADE IN PLANTS THAT DRAW WIRE @</b>		
	<b>United States</b> .....	<b>912 502</b>	<b>757 221</b>
	Connecticut .....	67 750	N
	Illinois .....	72 788	34 267
	Indiana .....	143 452	231 517
	New York .....	4 138	14 877
	Pennsylvania .....	16 179	N
	Rhode Island .....	166 979	154 260
<b>331491G</b>	<b>MAGNET WIRE, MADE IN PLANTS THAT DRAW WIRE @</b>		
	<b>United States</b> .....	<b>1 255 785</b>	<b>999 929</b>
	Connecticut .....	36 152	14 347
	Indiana .....	514 373	392 268

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331491</b>	<b>OTHER NONFERROUS METAL ROLLING, DRAWING, &amp; EXTRUDING</b>				
33122200	Bare steel wire .....	S	38 483	N	N
33120003	All other steel shapes and forms (except castings, forgings, and fabricated metal products) .....	D	D	N	N
33131205	Unalloyed aluminum and aluminum-base alloy ingot, pig, and shot .....	2.4	18 081	D	D
33131207	Alloyed aluminum and aluminum-base alloy ingot, pig, and shot .....	D	D	D	D
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing .....	D	D	S	156
33131600	Aluminum and aluminum-base alloy extruded shapes, including extruded rod, bar, pipe, tube, etc. ....	61.9	53 608	D	D
33131900	Aluminum and aluminum-base alloy wire for redrawing .....	22.9	37 096	N	N
33100089	Bare aluminum and aluminum-base alloy wire, except for redrawing .....	D	D	N	N
33100011	All other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	13 868	X	4 435
33141101	Copper and copper-base alloy cathodes .....	0.5	3 112	N	N
33141113	Copper and copper-base alloy ingot, ingot bar, and wire bar .....	D	D	N	N
33142127	Unalloyed copper and copper-base alloy rods .....	520.0	506 075	N	N
33142129	Alloyed copper and copper-base alloy rods .....	120.0	135 259	N	N
33142119	Copper and copper-base alloy wire for redrawing .....	P88.2	97 875	N	N
33100091	Bare copper and copper-base alloy wire, electrical (except wire for redrawing) .....	57.9	88 943	N	N
331000A5	Insulated copper wire and cable .....	X	56 960	X	N
33141111	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	39 195	X	11 631
33141935	Magnesium and magnesium-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	11.3	47 902	21.2	57 806
33141925	Nickel and nickel-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	9.6	279 131	S	147 547
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	32.6	50 907	33.2	38 085
33141945	Molybdenum and molybdenum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	4.4	30 540	2.8	15 770
33141949	Tin and tin-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	9 605	X	23 123
33149101	Titanium and titanium-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	67.5	434 424	P18.8	101 470
33141903	Precious metals and precious metal alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	2 760.5	255 291	838.4	248 842
33142101	Brass shapes and forms (except castings, forgings, and fabricated metal products) .....	D	D	D	D

See footnotes at end of table.



**Table 7. Materials Consumed by Kind: 1997 and 1992—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331491</b>	<b>OTHER NONFERROUS METAL ROLLING, DRAWING, &amp; EXTRUDING—Con.</b>				
33141921	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	115 321	X	168 466
00190021	Aluminum and aluminum-base alloy scrap (except home scrap) from other establishments of your company .....	—	—	N	N
00190022	Aluminum and aluminum-base alloy scrap (except home scrap) from all other sources .....	D	D	N	N
00190024	Copper and copper-base alloy scrap (except home scrap) .....	D	D	D	D
00190080	Other nonferrous metal scrap (except home scrap) .....	D	D	9.9	16 429
32521205	Synthetic rubber .....	D	D	N	N
32500029	All other chemicals and allied products .....	<sup>a</sup> 15.0	25 449	N	N
32721501	Optical fiber, data and nondata transmission .....	X	—	X	N
32799305	Fiberglass insulating materials .....	X	5 649	X	N
32700003	All other stone, clay, glass, and concrete products .....	X	—	X	N
32610013	Plastics products consumed in the form of sheets, rods, tubes, film, and other shapes .....	X	D	X	N
31311103	Cotton yarns .....	D	D	N	N
33593105	Connectors .....	X	D	X	N
00970099	All other materials and components, parts, containers, and supplies .....	X	608 722	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	670 268	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: <sup>p</sup> 10 to 19 percent estimated; <sup>a</sup> 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331491 NONFERROUS METAL (EXCEPT COPPER AND ALUMINUM) ROLLING, DRAWING, AND EXTRUDING**

This U.S. industry comprises establishments primarily engaged in (1) rolling, drawing, or extruding shapes (e.g., bar, plate, sheet, strip, tube) from purchased nonferrous metals) and/or (2) recovering nonferrous metals from

scrap and rolling, drawing, and/or extruding shapes (e.g., bar, plate, sheet, strip, tube) in integrated mills.

The data published with NAICS code 331491 include the following SIC industries:

- 3356 Nonferrous rolling and drawing, n.e.c.
- 3357 Nonferrous wire drawing & insulting (pt)



# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.



# Appendix F.

## Footnotes for Products Statistics and Materials Consumed by Kind

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### Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
\$ 3314911116 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314915100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314917400 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314919116 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331491C216 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
@331491E .....	For additional detail, see Current Industrial Report MA335J, Insulated Wire and Cable.
\$ 331491E100 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
@331491G .....	For additional detail, see Current Industrial Report MA335J, Insulated Wire and Cable.

### Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33111111.....	33121 pt.....	33121 pt	3312223.....	33152 pt.....	33152 pt	3313161.....	33541.....	33541
3311111101.....	3312115.....	3312111 pt	3312223101.....	3315251.....	3315201 pt	3313161101.....	3354115.....	3354115
3311111103.....	3312116.....	3312112 pt	3312223103.....	3315252.....	3315203 pt	3313161206.....	3354118.....	3354118
3311111105.....	3312153.....	3312151 pt	3312223105.....	3315253.....	3315205 pt	3313161311.....	3354125.....	3354125
3311111107.....	3312173.....	3312171 pt	3312223107.....	3315254.....	3315207 pt	3313161416.....	3354128.....	3354128
3311111109 pt.....	3312196 pt.....	3312131 pt	3312223109.....	3315255.....	3315209 pt	3313161YWV.....	3354100.....	3354100
3311111109 pt.....	3312196 pt.....	3312197 pt	3312223111 pt.....	3315214 pt.....	3315210 pt	3313163.....	33542.....	33542
3311111111.....	3312191.....	3312191	3312223111 pt.....	3315214 pt.....	3315213 pt	3313163101.....	3354261.....	3354261
3311111113.....	3312192.....	3312192	3312223113.....	3315256.....	3315216 pt	3313163106.....	3354263.....	3354263
3311111115 pt.....	3312195 pt.....	3312193	3312223122.....	3315257.....	3315222 pt	3313163YWV.....	3354200.....	3354200
3311111115 pt.....	3312195 pt.....	3312194	3312223124.....	3315258.....	3315223 pt	331316W.....	33540.....	33540
3311111117.....	3312198.....	3312198	3312223126.....	3315259.....	3315225 pt	331316WYWWW.....	3354000.....	3354000
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						3314217YWV.....	3351400.....	3351400

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3314223	33574 pt	33575 pt	3314923YVW	3341300	3341300	3315120106	3324064	3324064
3314223300 pt	3357402	3357500 pt	3314927	33414	33414	3315120216	3324067	3324067
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3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133101	3325421	3325421
3314230206	3341226	3341226	331492A pt	33134 pt	33134 pt	3315133106	3325431	3325431
3314230311	3341231	3341231	331492A pt	33416	33416	3315133YVW	3325400	3325400
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3314917400 pt	3357400 pt	3357500 pt	3315111201	3321121	3321121	3315240206	3365031	3365031
3314919	33563	33563	3315111YVW	3321100	3321100	3315240311	3365051	3365051
3314919101	3356381	3356381	3315113	33212	33212	3315240416	3365073	3365073
3314919106	3356383	3356383	3315113101	3321222	3321222	3315240421	3365061	3365061
3314919111	3356386	3356386	3315113206	3321224	3321224	3315240YVW	3365000	3365000
3314919116	3356391	3356391	3315113211	3321231	3321231	3315240YVW	3365002	3365002
3314919YVW	3356300	3356300	3315113216	3321233	3321233	3315250	33660	33660
331491C	33569	33569	3315113221	3321240	3321240	3315250101	3366020	3366020
331491C101	3356934	3356934	3315113YVW	3321200	3321200	3315250206	3366021	3366021
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331491G	33577	33577	3315117111	3321827	3321827	3315250YVW	3366000	3366000
331491G100	3357700	3357700	3315117116	3321830	3321830	3315250YVW	3366002	3366002
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331491W pt	33570 pt	33570 pt	3315117126	3321836	3321836	3315280116	3369085	3369085
331491WYVW pt	3356000	3356000	3315117YVW	3321800	3321800	3315280201	3369011	3369011
331491WYVW pt	3357000 pt	3357000 pt	3315119	33219	33219	3315280206	3369015	3369015
331491WYVW pt	3356002	3356002	3315119101	3321931	3321931	3315280211	3369023	3369023
331491WYVW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099 pt
331491WYVW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099 pt
			3315119206	3321939	3321939	3315280YVW	3369000	3369000
			3315119YVW	3321900	3321900	3315280YVW	3369002	3369002



# Secondary Smelting, Refining, and Alloying of Nonferrous Metal (Except Copper and Aluminum)

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## 1997 Economic Census

*Manufacturing*

Industry Series



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**U.S. Department of Commerce**

**William M. Daley,**

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**Economics**

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**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division



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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331492</b>	<b>Other nonferrous metal secondary smelting, refining, &amp; alloying</b>	<b>236</b>	<b>252</b>	<b>11 610</b>	<b>425 219</b>	<b>8 389</b>	<b>17 496</b>	<b>270 619</b>	<b>1 213 027</b>	<b>2 564 281</b>	<b>3 750 387</b>	<b>122 740</b>
331320	Electrometallurgical products (pt)	N	4	311	11 782	191	313	5 929	51 572	79 043	125 945	1 204
334130	Secondary nonferrous metals (pt)	N	131	5 485	187 715	3 938	8 521	118 777	613 826	1 783 681	2 416 491	62 040
339940	Primary metal products, n.e.c. (pt)	N	117	5 814	225 722	4 260	8 662	145 913	547 629	701 557	1 207 951	59 496

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.  
<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)	
	E <sup>1</sup>	Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)					Wages (\$1,000)
<b>331492, OTHER NONFERROUS METAL SECONDARY SMELTING, REFINING, &amp; ALLOYING</b>												
United States	-	252	104	11 610	425 219	8 389	17 496	270 619	1 213 027	2 564 281	3 750 387	122 740
California	-	32	12	1 106	45 120	716	1 707	25 670	174 431	227 218	409 673	9 933
Florida	-	5	2	104	3 447	76	162	2 219	11 472	6 413	18 590	1 081
Indiana	-	12	5	539	17 642	360	722	9 407	76 637	132 642	208 300	7 665
New Jersey	-	14	6	495	20 861	329	630	11 153	83 641	195 967	276 945	3 595
New York	-	15	7	581	23 848	333	703	12 918	47 979	233 103	278 508	12 590
Ohio	1	21	8	715	27 560	524	1 085	17 472	69 794	78 139	148 308	3 263
Pennsylvania	-	26	17	3 015	109 952	2 395	4 915	79 684	288 144	368 093	651 426	37 483
Tennessee	2	5	2	110	3 461	81	184	2 360	10 073	29 128	38 758	1 980

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.



**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331492, OTHER NONFERROUS METAL SECONDARY SMELTING, REFINING, &amp; ALLOYING</b>		<b>331492, OTHER NONFERROUS METAL SECONDARY SMELTING, REFINING, &amp; ALLOYING—Con.</b>	
Companies <sup>1</sup> .....	number.. 236	Coverage ratio .....	percent.. 88
All establishments .....	number.. 252	Value added .....	\$1,000.. 1 213 027
Establishments with 1 to 19 employees .....	number.. 148	Total inventories, beginning of year .....	\$1,000.. 508 718
Establishments with 20 to 99 employees .....	number.. 73	Finished goods inventories, beginning of year .....	\$1,000.. 183 484
Establishments with 100 employees or more .....	number.. 31	Work-in-process inventories, beginning of year .....	\$1,000.. 206 864
All employees .....	number.. 11 610	Materials and supplies inventories, beginning of year .....	\$1,000.. 118 370
Total compensation <sup>2</sup> .....	\$1,000.. 542 292	Total inventories, end of year .....	\$1,000.. 544 863
Annual payroll .....	\$1,000.. 425 219	Finished goods inventories, end of year .....	\$1,000.. 190 596
Total fringe benefits .....	\$1,000.. 117 073	Work-in-process inventories, end of year .....	\$1,000.. 226 673
Production workers, average for year .....	number.. 8 389	Materials and supplies inventories, end of year .....	\$1,000.. 127 594
Production workers on March 12 .....	number.. 8 408	Gross book value of total assets at beginning of year .....	\$1,000.. 1 037 823
Production workers on May 12 .....	number.. 8 353	Total capital expenditures (new and used) .....	\$1,000.. 122 740
Production workers on August 12 .....	number.. 8 375	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 38 231
Production workers on November 12 .....	number.. 8 420	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 84 509
Production-worker hours .....	1,000.. 17 496	Total retirements <sup>2</sup> .....	\$1,000.. 23 905
Production-worker wages .....	\$1,000.. 270 619	Gross book value of total assets at end of year .....	\$1,000.. 1 136 658
Total cost of materials .....	\$1,000.. 2 564 281	Total depreciation during year <sup>2</sup> .....	\$1,000.. 107 500
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 2 312 989	Total rental payments <sup>2</sup> .....	\$1,000.. 21 610
Cost of resales .....	\$1,000.. 127 988	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 8 560
Cost of fuels .....	\$1,000.. 35 725	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 13 050
Cost of purchased electricity .....	\$1,000.. 52 773	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 5 434
Cost of contract work .....	\$1,000.. 34 806	Response coverage ratio <sup>4</sup> .....	percent.. 56
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 997 774	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 25 424
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Response coverage ratio <sup>4</sup> .....	percent.. 56
Total value of shipments .....	\$1,000.. 3 750 387	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 3 290
Primary products value of shipments .....	\$1,000.. 3 265 044	Response coverage ratio <sup>4</sup> .....	percent.. 56
Secondary products value of shipments .....	\$1,000.. 173 898	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 2 826
Total miscellaneous receipts .....	\$1,000.. 311 445	Response coverage ratio <sup>4</sup> .....	percent.. 56
Value of resales .....	\$1,000.. 164 126	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 1 726
Contract receipts .....	\$1,000.. 138 892	Response coverage ratio <sup>4</sup> .....	percent.. 56
Other miscellaneous receipts .....	\$1,000.. 8 427	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 2 843
Primary products specialization ratio .....	percent.. 94	Response coverage ratio <sup>4</sup> .....	percent.. 56
Value of primary products shipments made in all industries .....	\$1,000.. 3 673 561	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 1 669
Value of primary products shipments made in this industry .....	\$1,000.. 3 265 044	Response coverage ratio <sup>4</sup> .....	percent.. 56
Value of primary products shipments made in other industries .....	\$1,000.. 408 517	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 7 192
		Response coverage ratio <sup>4</sup> .....	percent.. 56

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331492. OTHER NONFERROUS METAL SECONDARY SMELTING, REFINING, &amp; ALLOYING</b>												
<b>All establishments .....</b>	-	<b>252</b>	<b>104</b>	<b>11 610</b>	<b>425 219</b>	<b>8 389</b>	<b>17 496</b>	<b>270 619</b>	<b>1 213 027</b>	<b>2 564 281</b>	<b>3 750 387</b>	<b>122 740</b>
Establishments with 1 to 4 employees .....	8	83	-	179	4 971	127	207	2 843	17 479	39 506	57 003	2 789
Establishments with 5 to 9 employees .....	8	24	-	158	5 539	113	198	2 971	15 329	37 471	54 078	2 885
Establishments with 10 to 19 employees .....	3	41	-	569	18 905	383	751	11 213	54 212	140 702	195 954	5 870
Establishments with 20 to 49 employees .....	-	48	48	1 487	50 719	1 007	1 975	26 923	177 324	335 107	506 535	11 197
Establishments with 50 to 99 employees .....	-	25	25	1 724	71 174	1 133	2 405	35 446	182 207	377 527	557 252	15 012
Establishments with 100 to 249 employees .....	-	23	23	3 656	141 937	2 463	5 468	88 123	468 689	1 250 157	1 734 770	54 020
Establishments with 250 to 499 employees .....	-	6	6	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	88	-	350	10 184	245	393	5 928	31 968	73 243	106 349	6 130

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331492</b>	<b>Other nonferrous metal secondary smelting, refining, &amp; alloying .....</b>	<b>252</b>	<b>11 610</b>	<b>425 219</b>	<b>8 389</b>	<b>17 496</b>	<b>270 619</b>	<b>1 213 027</b>	<b>2 564 281</b>	<b>3 750 387</b>	<b>122 740</b>
3314921	Other nonferrous metal powders, paste, and flakes .....	45	4 903	196 388	3 652	7 564	130 616	457 383	626 984	1 044 556	46 204
3314923	Secondary lead .....	23	2 973	95 672	2 178	4 955	65 769	327 707	432 777	762 460	38 290
3314927	Secondary zinc .....	10	703	22 808	518	1 000	14 483	77 667	224 294	300 380	8 360
3314929	Secondary precious metals and precious metal alloys .....	24	1 026	42 641	637	1 360	22 619	124 490	885 117	1 029 471	6 994
331492A	Other nonferrous additive alloys .....	21	845	31 065	602	1 179	16 927	117 643	241 690	351 779	7 666

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331492</b>	<b>Other secondary nonferrous metals</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>3 673 561</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3314921	Other nonferrous metal powders, paste, and flakes	N	X	X	873 037	N	X	X	N
33149211	Nickel-cobalt-base superalloy material powders, paste, and flakes	N	X	X	105 716	N	X	X	N
3314921101	Nickel-cobalt-base superalloy material powders, paste, and flakes mil lb.	11	X	21.6	105 716	15	X	10.9	77 332
33149212	Tungsten and tungsten-base alloy powders, paste, and flakes	N	X	X	183 780	N	X	X	N
3314921206	Tungsten and tungsten-base alloy powders, paste, and flakes mil lb.	6	X	S	183 780	9	X	46.5	149 942
33149213	Molybdenum powders, paste, and flakes	N	X	X	14 115	N	X	X	N
3314921311	Molybdenum powders, paste, and flakes mil lb.	4	X	1.1	14 115	5	X	1.8	19 335
33149214	Other primary nonferrous metal powders, paste, and flakes	N	X	X	569 426	N	X	X	N
3314921416	Titanium and tantalum powders, paste, and flakes	4	X	X	14 080	N	X	X	N
3314921426	Precious metal and precious-metal-base alloy powders, paste, and flakes (gold, silver, platinum, etc.)	14	X	S	107 663	12	X	49.9	45 133
3314921431	Other nonferrous metal powders, paste, and flakes mil lb.	33	X	S	447 683	28	X	174.9	185 217
3314921Y	Other nonferrous metal powders, paste, and flakes, nsk	N	X	X	-	N	X	X	N
3314921YVW	Other nonferrous metal powders, paste, and flakes, nsk	N	X	X	-	N	X	X	N
3314923	Secondary lead	N	X	X	711 694	N	X	X	574 309
33149231	Secondary unalloyed lead (pig, ingots, shot, etc.)	N	X	X	363 670	N	X	X	N
3314923101	Secondary unalloyed lead (pig, ingots, shot, etc.) \$ 1,000 s tons	8	587.7	583.5	363 670	13	S	S	354 162
33149232	Secondary antimonial lead- and tin-base alloys	N	X	X	348 024	N	X	X	N
3314923206	Secondary lead- and tin-base alloy antimonial lead \$ 1,000 s tons	9	S	284.4	177 107	11	207.2	175.2	103 699
3314923211	Secondary lead- and tin-base alloy babbitt metal \$ 1,000 s tons	3	0.4	0.4	2 409	4	S	0.6	2 871
3314923216	Secondary lead- and tin-base alloy solder \$ 1,000 s tons	11	S	42.0	105 590	10	S	39.8	92 136
3314923221	Other secondary lead- and tin-base alloys, including type metal \$ 1,000 s tons	10	D	85.0	62 918	4	22.5	22.5	13 744
3314923Y	Secondary lead, nsk	N	X	X	-	N	X	X	N
3314923YVW	Secondary lead, nsk	N	X	X	-	N	X	X	7 697
3314927	Secondary zinc	N	X	X	303 964	N	X	X	285 996
33149271	Secondary zinc, including all ASTM specification zinc	N	X	X	80 738	N	X	X	N
3314927101	Secondary zinc, including all ASTM specification zinc \$	5	X	X	80 738	N	X	X	N
33149272	Secondary zinc-base alloys	N	X	X	223 226	N	X	X	N
3314927206	Secondary zinc-base alloys \$ 1,000 s tons	9	258.5	S	223 226	9	S	254.4	149 636
3314927Y	Secondary zinc, nsk	N	X	X	-	N	X	X	N
3314927YVW	Secondary zinc, nsk	N	X	X	-	N	X	X	1 294
3314929	Secondary precious metals and precious metal alloys	N	X	X	1 129 325	N	X	X	1 343 263
33149291	Secondary gold and gold alloys	N	X	X	732 464	N	X	X	N
3314929101	Secondary gold and gold alloys \$	17	X	X	732 464	21	X	X	1 003 696
33149292	Secondary silver, silver alloys, platinum, and platinum alloys	N	X	X	396 861	N	X	X	N
3314929206	Secondary silver and silver alloys \$	16	X	X	152 155	22	X	X	96 499
3314929211	Secondary platinum and platinum alloys, including platinum-group metals \$	10	X	X	244 706	16	X	X	212 815
3314929Y	Secondary precious metals and precious metal alloys, nsk	N	X	X	-	N	X	X	N
3314929YVW	Secondary precious metals and precious metal alloys, nsk	N	X	X	-	N	X	X	30 253
331492A	Other nonferrous additive alloys	N	X	X	420 091	N	X	X	N
331492A1	Nonferrous superalloys	N	X	X	D	N	X	X	N
331492A101	Nonferrous superalloys (gross weight) \$ 1,000 s tons	5	9.2	8.5	160 907	N	N	N	N
331492A106	Secondary nickel and nickel-base alloys \$	4	X	X	D	5	X	X	N
331492A111	Secondary unalloyed tin \$	7	X	X	20 343	6	X	X	N
331492A116	Other secondary nonferrous metals and their alloys, including cadmium, antimony, cobalt, titanium sponge, etc. \$	22	X	X	185 695	12	X	X	42 462

See footnotes at end of table.

**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331492</b>	<b>Other secondary nonferrous metals—Con.</b>								
331492A	Other nonferrous additive alloys—Con.								
331492A2	Other nonferrous additive alloys (including nonferrous spiegeleisen), (gross weight) .....	N	X	X	D	N	X	X	N
331492A206	Other nonferrous additive alloys (including nonferrous spiegeleisen), (gross weight) .....	1	D	D	D	N	N	N	N
331492A3	Other nonferrous products made in electric and other furnaces .....	N	X	X	38 445	N	X	X	N
331492A311	Other nonferrous products made in electric and other furnaces (gross weight) .....	5	S	32.0	38 445	N	N	N	N
331492AY	Other nonferrous additive alloys, nsk .....	N	X	X	—	N	X	X	N
331492AYWV	Other nonferrous additive alloys, nsk .....	N	X	X	—	N	X	X	N
331492W	Other secondary nonferrous metals, nsk, total .....	N	X	X	235 450	N	X	X	N
331492WY	Other secondary nonferrous metals, nsk, total .....	N	X	X	235 450	N	X	X	N
331492WYWW	Other secondary nonferrous metals, nsk, for nonadministrative-record establishments .....	N	X	X	143 852	N	X	X	N
331492WYWY	Other secondary nonferrous metals, nsk, for administrative-record establishments .....	N	X	X	91 598	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3314921</b>	<b>OTHER NONFERROUS METAL POWDERS, PASTE, AND FLAKES</b>		
	United States .....	<b>873 037</b>	<b>N</b>
	California .....	92 473	N
	Michigan .....	29 432	N
	New Jersey .....	39 925	N
	New York .....	56 727	N
	Ohio .....	21 571	N
	Pennsylvania .....	243 291	N
<b>3314923</b>	<b>SECONDARY LEAD</b>		
	United States .....	<b>711 694</b>	<b>574 309</b>
	California .....	108 393	N
<b>3314927</b>	<b>SECONDARY ZINC</b>		
	United States .....	<b>303 964</b>	<b>285 996</b>
	Michigan .....	60 975	N
<b>3314929</b>	<b>SECONDARY PRECIOUS METALS AND PRECIOUS METAL ALLOYS</b>		
	United States .....	<b>1 129 325</b>	<b>1 343 263</b>
<b>331492A</b>	<b>OTHER NONFERROUS ADDITIVE ALLOYS</b>		
	United States .....	<b>420 091</b>	<b>N</b>
	Arizona .....	4 765	N
	Illinois .....	4 935	N
	New York .....	5 254	N
	Pennsylvania .....	97 040	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331492</b>	<b>OTHER NONFERROUS METAL SECONDARY SMELTING, REFINING, &amp; ALLOYING</b>				
33131209	Aluminum and aluminum-base alloy ingot . . . . . 1,000 s tons..	D	D	N	N
33100009	All other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	2 561	X	N
33141103	Refined unalloyed copper (cathodes, ingots, cakes, slabs, etc.) and blister or anode copper . . . . . 1,000 s tons..	S	66	N	N
33100015	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	D	X	N
33141923	Lead-base alloy shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	3 765	X	N
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products) . . . . . 1,000 s tons..	79.5	117 992	N	N
33141939	Tin shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	17 895	X	N
33141903	Precious metals and precious metal alloy shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	104 585	X	N
33141929	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	70 802	X	N
21223400	Mining copper ores, concentrates and precipitates (gross weight) . . . . . 1,000 s tons..	-	-	N	N
21220009	Mining precious metal ores and concentrates . . . . .	X	D	X	N
21220015	Mining and all other nonferrous metal ores and concentrates . . . . .	X	24 211	X	N
00190020	Aluminum and aluminum-base alloy scrap (excluding home scrap) . . . . . 1,000 s tons..	D	D	N	N
00190024	Copper and copper-base alloy scrap (except home scrap) . . . . .	X	499	X	N
00190025	Lead and lead-base alloy scrap . . . . .	X	285 554	X	N
00190026	Zinc and zinc-base alloy scrap (including drosses and skimmings) . . . . .	X	42 908	X	N
00190027	Tinplate scrap (including shredded steel can scrap) . . . . .	X	D	X	N
00190051	Precious metal and precious metal alloy scrap . . . . .	X	543 049	X	N
00190052	All other nonferrous metal and metal-base alloy scrap . . . . .	X	166 503	X	N
33131100	Alumina (gross weight) . . . . . 1,000 s tons..	D	D	N	N
00970099	All other materials and components, parts, containers, and supplies . . . . .	X	434 124	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. . . . .	X	268 961	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each



product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331492 SECONDARY SMELTING, REFINING, AND ALLOYING OF NONFERROUS METAL (EXCEPT COPPER AND ALUMINUM)**

This U.S. industry comprises establishments primarily engaged in (1) alloying purchased nonferrous metals and/or (2) recovering nonferrous metals from scrap. Establishments in this industry make primary forms (e.g., bar, billet, bloom, cake, ingot, slab, slug, wire) using smelting or refining processes.

The data published with NAICS code 331492 include the following SIC industries:

3313 Electrometallurgical products (pt)  
3341 Secondary nonferrous metals (pt)  
3399 Primary metal products, n.e.c. (pt)

This definition comes from the 1997 NAICS Manual. However, for this industry, the 1997 Economic Census – Manufacturing did not fully implement the conversion to NAICS. Data for NAICS industry 331492 include establishments primarily engaged in the manufacture of other nonferrous additive alloys. The NAICS definitions will be fully implemented with the 2002 Economic Census.

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference



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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F.

## Footnotes for Products Statistics and Materials Consumed by Kind

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### Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
\$ 3314923101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314923206 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314923211 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314923216 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314923221 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314927101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314927206 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314929101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314929206 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3314929211 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331492A101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331492A106 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331492A111 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 331492A116 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

### Part 2. Materials Consumed by Kind (Table 7)

Not applicable.

# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33111111	33121 pt	33121 pt	3312223	33152 pt	33152 pt	3313161	33541	33541
3311111101	331215	3312111 pt	3312223101	3315251	3315201 pt	3313161101	3354115	3354115
3311111103	3312116	3312112 pt	3312223103	3315252	3315203 pt	3313161206	3354118	3354118
3311111105	3312153	3312151 pt	3312223105	3315253	3315205 pt	3313161311	3354125	3354125
3311111107	3312173	3312171 pt	3312223107	3315254	3315207 pt	3313161416	3354128	3354128
3311111109 pt	3312196 pt	3312131 pt	3312223109	3315255	3315209 pt	3313161YVW	3354100	3354100
3311111109 pt	3312196 pt	3312197 pt	3312223111 pt	3315214 pt	3315210 pt	3313163	33542	33542
3311111111	3312191	3312191	3312223111 pt	3315214 pt	3315213 pt	3313163101	3354261	3354261
3311111113	3312192	3312192	3312223113	3315256	3315216 pt	3313163106	3354263	3354263
3311111115 pt	3312195 pt	3312193	3312223122	3315257	3315222 pt	3313163YVW	3354200	3354200
3311111115 pt	3312195 pt	3312194	3312223124	3315258	3315223 pt	331316W	33540	33540
3311111117	3312198	3312198	3312223126	3315259	3315225 pt	331316WYVW	3354000	3354000
3311111YVW	3312100 pt	3312100 pt	3312223128	3315260	3315230 pt	331316WYVW	3354002	3354002
			3312223YVW	3315200 pt	3315200 pt			
3311112	33991 pt	33991 pt	3312225	33155	33155	3313191	33551	33551
3311112100 pt	3399100 pt	3399100 pt	3312225100	3315500	3315500	3313191100	3355100	3355100
3311112100 pt	3399155	3399155						
33111113	33122	33122	3312227	33156	33156	3313193	33552	33552
3311113100	3312200	3312200	3312227101	3315613	3315613	3313193100 pt	3355200 pt	3355200
			3312227110	3315621	3315621	3313193100 pt	3355200 pt	3355222
3311115	33123	33123	3312227112 pt	3315640 pt	3315635	3313193100 pt	3355200 pt	3355225
3311115100	3312300	3312300	3312227112 pt	3315640 pt	3315671			
			3312227YVW	3315600	3315600			
3311117	33124	33124				3313197	33571	33571
3311117100	3312400	3312400	3312229	33157	33157	3313197100	3357100	3357100
			3312229100	3315700	3315700			
3311119	33125	33125				3313199	33553	33553
3311119100	3312500	3312500	331222B	33159	33159	3313199100	3355300	3355300
			331222B110	3315951	3315951			
331111B	33126	33126	331222B120	3315955	3315955	331319A	33574 pt	33575 pt
331111B100	3312600	3312600	331222B122	3315963	3315963	331319A100 pt	3357401	3357500 pt
			331222B124	3315971	3315971	331319A100 pt	3357400 pt	3357500 pt
331111D	33127	33127	331222B126 pt	3315998 pt	3315942	331319C	33554	33554
331111D100	3312700	3312700	331222B126 pt	3315998 pt	3315973	331319C100	3355400	3355400
			331222B126 pt	3315998 pt	3315975			
331111F	33128	33128	331222B126 pt	3315998 pt	3315998	331319W pt	33550	33550
331111F100	3312800	3312800	331222BYVW	3315900	3315900			
						331319W pt	33570 pt	33570 pt
331111H	3312A	3312A	331222W	33150 pt	33150 pt	331319WYVW pt	3355000	3355000
331111H101	3312A17	3312A17	331222WYVW	3315000 pt	3315000 pt	331319WYVW pt	3357000 pt	3357000 pt
331111H203	3312A26	3312A26	331222WYVW	3315002 pt	3315002 pt	331319WYVW pt	3355002	3355002
331111HYVW	3312A00	3312A00				331319WYVW pt	3357002 pt	3357002 pt
331111J	3312B	3312B	3313110 pt	28190 pt	28190 pt	3314110 pt	33310	33310
331111J101	3312B62	3312B62				3314110 pt	33311	33311
331111J203	3312B66	3312B66	3313110 pt	28195	28195	3314110 pt	33312	33312
331111JYVW	3312B00	3312B00	3313110100	2819500	2819500	3314110101	3331100	3331100
			3313110YVW	2819000 pt	2819000 pt	3314110106	3331217	3331217
331111L	3312C	3312C	3313110YVW	2819002 pt	2819002 pt	3314110111	3331230	3331230
331111L100	3312C00	3312C00				3314110YVW pt	3331000	3331000
						3314110YVW pt	3331200	3331200
331111W pt	33120 pt	33120 pt	3313121	33347	33347	3314110YVW	3331002	3331002
			3313121100	3334700	3334700			
331111W pt	33990 pt	33990 pt	3313123	33348	33348	3314191	33391	33391
331111WYVW pt	3312000 pt	3312000 pt	3313123100	3334800	3334800	3314191100	3339100	3339100
331111WYVW pt	3399000 pt	3399000 pt						
331111WYVW pt	3312002 pt	3312002 pt	331312W	33340	33340	3314193	33392	33392
331111WYVW pt	3399002 pt	3399002 pt	331312WYVW	3334000	3334000	3314193101 pt	3339231 pt	3339234
			331312WYVW	3334002	3334002	3314193101 pt	3339231 pt	3339244
3311121	33132	33132				3314193101 pt	3339231 pt	3339255
3311121100	3313200	3313200	3313141	33417	33417	3314193111	3339251	3339251
			3313141100	3341700	3341700	3314193YVW	3339200	3339200
3311123	33133	33133						
3311123100	3313300	3313300	3313143	33418	33418	3314197	33395	33395
			3313143100	3341800	3341800	3314197101	3339525	3339525
3311125	33134 pt	33134 pt				3314197206	3339535	3339535
3311125101	3313416	3313415 pt				3314197311	3339545	3339545
3311125203 pt	3313487 pt	3313408	3313145	33991 pt	33991 pt	3314197YVW	3339500	3339500
3311125203 pt	3313487 pt	3313489 pt	3313145100	3399111	3399111			
3311125305	3313497	3313498 pt						
3311125YVW	3313400 pt	3313400 pt	331314W pt	33410 pt	33410 pt			
331112W	33130 pt	33130 pt	331314W pt	33990 pt	33990 pt	3314199	33398	33398
331112WYVW	3313000 pt	3313000 pt	331314WYVW pt	3341000 pt	3341000 pt	3314199101	3339805	3339805
331112WYVW	3313002 pt	3313002 pt	331314WYVW pt	3399000 pt	3399000 pt	3314199103	3339833	3339833
			331314WYVW pt	3341002 pt	3341002 pt	3314199106 pt	3339851 pt	3339843
3312100	33170	33170	331314WYVW pt	3399002 pt	3399002 pt	3314199121	3339873	3339873
3312100100	3317000 pt	3317000 pt				3314199126 pt	3339889 pt	3339871
3312100YVW	3317000 pt	3317000 pt	3313151	33531	33531	3314199126 pt	3339889 pt	3339889
3312100YVW	3317002	3317000 pt	3313151101	3353113	3353113	3314199131	3339899	3339899
			3313151106	3353115	3353115	3314199YVW	3339800	3339800
			3313151YVW	3353100	3353100			
3312211	33167	33167				331419W	33390	33390
3312211100	3316700	3316700				331419WYVW	3339000	3339000
						331419WYVW	3339002	3339002
3312213	33168	33168	3313153	33532	33532			
3312213100	3316800	3316800	3313153101	3353223	3353223	3314211	33511	33511
			3313153106	3353225	3353225	3314211101	3351111	3351111
			3313153211	3353227	3353227	3314211206	3351131	3351131
331221W	33160	33160	3313153216	3353231	3353231	3314211YVW	3351100	3351100
331221WYVW	3316000	3316000	3313153221	3353233	3353233			
331221WYVW	3316002	3316002	3313153YVW	3353200	3353200	3314213	33513	33513
						3314213101	3351311	3351311
3312221	33151	33151	3313155	33533	33533	3314213206	3351332	3351332
3312221110	3315113	3315113	3313155100	3353300	3353300			
3312221112	3315115	3315115				3314213YVW	3351300	3351300
3312221214	3315125	3315125	331315W	33530 pt	33530 pt			
3312221222	3315134	3315134	331315WYVW	3353000 pt	3353000 pt	3314217	33514	33514
3312221YVW	3315100	3315100	331315WYVW	3353002 pt	3353002 pt	3314217101	3351413	3351413
			331315WYVW	3353002 pt	3353002 pt	3314217206	3351435	3351435
						3314217YVW	3351400	3351400

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3314219	33515	33515	3314921	33991 pt	33991 pt	331511A	33221	33221
3314219101	3351516	3351516	3314921101	3399166	3399166	331511A100	3322100	3322100
3314219211	3351536	3351536	3314921206	3399177	3399177	331511C	33222	33222
3314219306	3351518	3351518	3314921311	3399186	3399186	331511C300	3322200	3322200
3314219316	3351538	3351538	3314921416 pt	3399189 pt	3399187	331511E	33216	33216
3314219YVW	3351500	3351500	3314921416 pt	3399189 pt	3399188	331511E200	3321600	3321600
331421W	33510	33510	3314921426	3399191	3399191	331511W pt	33210	33210
331421WYWW	3351000	3351000	3314921431	3399198	3399198	331511W pt	33220	33220
331421WYWW	3351002	3351002	3314921YVW	3399100 pt	3399100 pt	331511W pt	33220	33220
3314221	33572	33572	3314923	33413	33413	331511WYWW pt	3321000	3321000
3314221101	3357211	3357211	3314923101	3341311	3341311	331511WYWW pt	3322000	3322000
3314221106	3357251	3357251	3314923206	3341321	3341321	331511WYWW pt	3321002	3321002
3314221211	3357271	3357271	3314923211	3341333	3341333	331511WYWW pt	3322002	3322002
3314221216	3357281	3357281	3314923216	3341351	3341351	3315120	33240	33240
3314221YVW	3357200	3357200	3314923221	3341399	3341399	3315120101	3324063	3324063
3314223	33574 pt	33575 pt	3314923YVW	3341300	3341300	3315120106	3324064	3324064
3314223300 pt	3357402	3357500 pt	3314927	33414	33414	3315120216	3324067	3324067
3314223300 pt	3357400 pt	3357500 pt	3314927101 pt	3341431 pt	3341405	3315120311	3324066	3324066
331422W	33570 pt	33570 pt	3314927101 pt	3341431 pt	3341434	3315120YVW	3324000	3324000
331422WYWW	3357000 pt	3357000 pt	3314927101 pt	3341431 pt	3341444	3315120YVW	3324002	3324002
331422WYWW	3357002 pt	3357002 pt	3314927206	3341411	3341411	3315131	33252	33252
3314230 pt	33410 pt	33410 pt	3314927YVW	3341400	3341400	3315131101	3325211	3325211
3314230 pt	33412	33412	3314929	33415	33415	3315131206	3325215	3325215
3314230 pt	33990 pt	33990 pt	3314929101	3341525	3341525	3315131211	3325219	3325219
3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315131YVW	3325200	3325200
3314230101	3341224	3341224	3314929211	3341545	3341545	3315133	33254	33254
3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133101	3325421	3325421
3314230206	3341226	3341226	331492A pt	33134 pt	33134 pt	3315133106	3325431	3325431
3314230311	3341231	3341231	331492A pt	33416	33416	3315133YVW	3325400	3325400
3314230YVW pt	3341000 pt	3341000 pt	331492A101 pt	3313417	3313415 pt	3315135	33255	33255
3314230YVW pt	3341200	3341200	331492A101 pt	3341633	3341633	3315135101	3325551	3325551
3314230YVW pt	3399000 pt	3399000 pt	331492A106	3341635	3341635	3315135106	3325555	3325555
3314230YVW pt	3399100 pt	3399100 pt	331492A111	3341671	3341671	3315135111	3325559	3325559
3314230YVW pt	3341002 pt	3341002 pt	331492A116	3341697	3341697	3315135YVW	3325500	3325500
3314230YVW pt	3399002 pt	3399002 pt	331492A206	3313488	3313489 pt	331513W	33250	33250
3314911	33561	33561	331492A311	3313499	3313498 pt	331513WYVW	3325000	3325000
3314911101	3356161	3356161	331492AYVW pt	3313400 pt	3313400 pt	331513WYVW	3325002	3325002
3314911106	3356164	3356164	331492AYVW pt	3313400	3313400	3315210	33630	33630
3314911111	3356165	3356165	331492W pt	33130 pt	33130 pt	3315210000	3363000 pt	3363000 pt
3314911116	3356166	3356166	331492W pt	33410 pt	33410 pt	3315210YVW	3363000 pt	3363000 pt
3314911YVW	3356100	3356100	331492WYVW pt	33990 pt	33990 pt	3315220	33640	33640
3314913	33562	33562	331492WYVW pt	3313000 pt	3313000 pt	3315220101	3364011	3364011
3314913101	3356272	3356272	331492WYVW pt	3341000 pt	3341000 pt	3315220206	3364021	3364021
3314913106	3356274	3356274	331492WYVW pt	3399000 pt	3399000 pt	3315220311	3364031	3364031
3314913111	3356279	3356279	331492WYVW pt	3313002 pt	3313002 pt	3315220416	3364041	3364041
3314913YVW	3356200	3356200	331492WYVW pt	3341002 pt	3341002 pt	3315220521	3364051	3364051
3314915	33573	33573	3315111	33211	33211	3315220YVW	3364000	3364000
3314915100	3357300	3357300	3315111106	3321123	3321123	3315220YVW	3364002	3364002
3314917	33574 pt	33575 pt	3315111111	3321125	3321125	3315240	33650	33650
3314917400 pt	3357405	3357500 pt	3315111116	3321126	3321126	3315240101	3365011	3365011
3314917400 pt	3357400 pt	3357500 pt	3315111201	3321121	3321121	3315240206	3365031	3365031
3314919	33563	33563	3315111YVW	3321100	3321100	3315240311	3365051	3365051
3314919101	3356381	3356381	3315113	33212	33212	3315240416	3365073	3365073
3314919106	3356383	3356383	3315113101	3321222	3321222	3315240421	3365061	3365061
3314919111	3356386	3356386	3315113206	3321224	3321224	3315240YVW	3365000	3365000
3314919116	3356391	3356391	3315113211	3321231	3321231	3315240YVW	3365002	3365002
3314919YVW	3356300	3356300	3315113216	3321233	3321233	3315250	33660	33660
331491C	33569	33569	3315113221	3321240	3321240	3315250101	3366020	3366020
331491C101	3356934	3356934	3315113YVW	3321200	3321200	3315250206	3366021	3366021
331491C106	3356951	3356951	3315115	33217	33217	3315250221	3366025	3366025
331491C111	3356957	3356957	331515101	3321731	3321731	3315250411	3366022	3366022
331491C121	3356994	3356994	331515106	3321733	3321733	3315250416	3366024	3366024
331491C126	3356996	3356996	331515111	3321735	3321735	3315250426	3366026	3366026
331491C131	3356997	3356997	331515116	3321736	3321736	3315250531	3366031	3366031
331491C216	3356993	3356993	3315151YVW	3321700	3321700	3315250536	3366041	3366041
331491CYVW	3356900	3356900	3315117	33218	33218	3315250541	3366051	3366051
331491E	33576	33576	3315117101	3321822	3321822	3315250546	3366061	3366061
331491E100	3357600	3357600	3315117106	3321824	3321824	3315250651	3366072	3366072
331491G	33577	33577	3315117111	3321827	3321827	3315250YVW	3366000	3366000
331491G100	3357700	3357700	3315117116	3321830	3321830	3315250YVW	3366002	3366002
331491W pt	33560	33560	3315117121	3321833	3321833	3315280	33690	33690
331491W pt	33570 pt	33570 pt	3315117126	3321836	3321836	3315280116	3369085	3369085
331491WYVW pt	3356000	3356000	3315117YVW	3321800	3321800	3315280201	3369011	3369011
331491WYVW pt	3357000 pt	3357000 pt	3315119	33219	33219	3315280206	3369015	3369015
331491WYVW pt	3356002	3356002	3315119101	3321931	3321931	3315280211	3369023	3369023
331491WYVW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099 pt
331491WYVW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099 pt
331491WYVW pt	3357002 pt	3357002 pt	3315119206	3321939	3321939	3315280YVW	3369000	3369000
331491WYVW pt	3357002 pt	3357002 pt	3315119YVW	3321900	3321900	3315280YVW	3369002	3369002





# Iron Foundries

# 1997

Issued August 1999

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## 1997 Economic Census

*Manufacturing*

Industry Series



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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.



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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331511</b>	<b>Iron foundries</b> .....	<b>604</b>	<b>696</b>	<b>86 306</b>	<b>3 231 109</b>	<b>71 682</b>	<b>154 668</b>	<b>2 493 359</b>	<b>7 092 873</b>	<b>5 174 792</b>	<b>12 266 373</b>	<b>512 167</b>
332100	Gray iron foundries .....	N	668	83 678	3 117 172	69 455	150 033	2 399 798	6 869 770	5 048 831	11 913 758	503 167
332200	Malleable iron foundries .....	N	28	2 628	113 937	2 227	4 635	93 561	223 103	125 961	352 615	9 000

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331511, IRON FOUNDRIES</b>												
<b>United States</b> .....	-	<b>696</b>	<b>456</b>	<b>86 306</b>	<b>3 231 109</b>	<b>71 682</b>	<b>154 668</b>	<b>2 493 359</b>	<b>7 092 873</b>	<b>5 174 792</b>	<b>12 266 373</b>	<b>512 167</b>
Alabama .....	-	33	26	6 617	230 430	5 291	12 228	164 627	384 784	585 841	988 683	33 358
California .....	-	34	16	1 818	55 462	1 534	3 169	41 729	162 997	76 812	238 897	7 920
Georgia .....	-	17	7	1 336	38 865	1 154	2 660	29 328	133 273	88 658	220 804	7 791
Illinois .....	-	39	26	4 152	151 074	3 282	6 389	107 406	367 110	234 463	598 544	21 682
Indiana .....	-	46	34	8 822	364 860	7 394	17 097	289 048	732 325	482 293	1 212 943	73 972
Iowa .....	-	15	13	2 270	95 140	1 888	3 855	74 366	237 637	168 208	406 117	15 410
Louisiana .....	-	7	3	301	8 016	262	553	5 700	14 948	10 573	26 200	1 040
Massachusetts .....	1	21	10	669	23 936	502	1 128	16 714	40 281	25 175	66 269	3 249
Michigan .....	-	55	38	8 700	404 812	7 286	16 183	324 735	939 870	577 158	1 515 516	46 509
Minnesota .....	-	14	12	1 220	40 273	1 001	2 100	29 488	91 118	47 820	138 676	6 632
Missouri .....	-	11	6	772	21 061	644	1 375	15 555	56 904	23 348	80 644	3 805
New York .....	-	15	7	652	20 422	496	973	13 593	36 823	33 286	67 558	3 488
Ohio .....	-	82	59	13 625	631 468	11 686	26 284	523 040	1 184 859	927 144	2 116 220	125 727
Oklahoma .....	-	11	7	998	33 447	850	1 600	27 090	68 349	41 069	109 461	2 427
Pennsylvania .....	-	64	47	5 817	186 098	4 736	10 052	137 837	399 060	248 353	643 893	34 409
South Carolina .....	-	7	3	514	15 867	442	774	11 316	35 081	23 015	57 808	1 600
Tennessee .....	-	19	11	3 489	104 294	3 011	5 741	73 619	202 513	187 278	388 442	11 843
Texas .....	-	32	22	4 635	132 975	3 888	7 978	101 355	370 590	201 525	568 332	22 844
Utah .....	-	5	4	431	13 130	328	640	8 646	41 061	33 879	75 942	1 798
Wisconsin .....	-	46	41	10 398	369 295	8 594	18 454	286 937	955 243	628 373	1 577 104	42 992

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331511, IRON FOUNDRIES</b>		<b>331511, IRON FOUNDRIES—Con.</b>	
Companies <sup>1</sup> .....	number.. 604	Value added .....	\$.1,000.. 7 092 873
All establishments .....	number.. 696	Total inventories, beginning of year .....	\$.1,000.. 999 467
Establishments with 1 to 19 employees .....	number.. 240	Finished goods inventories, beginning of year .....	\$.1,000.. 463 128
Establishments with 20 to 99 employees .....	number.. 245	Work-in-process inventories, beginning of year .....	\$.1,000.. 220 254
Establishments with 100 employees or more .....	number.. 211	Materials and supplies inventories, beginning of year .....	\$.1,000.. 316 085
All employees .....	number.. 86 306	Total inventories, end of year .....	\$.1,000.. 1 033 471
Total compensation <sup>2</sup> .....	\$.1,000.. 4 216 343	Finished goods inventories, end of year .....	\$.1,000.. 462 059
Annual payroll .....	\$.1,000.. 3 231 109	Work-in-process inventories, end of year .....	\$.1,000.. 222 615
Total fringe benefits .....	\$.1,000.. 985 234	Materials and supplies inventories, end of year .....	\$.1,000.. 348 797
Production workers, average for year .....	number.. 71 682	Gross book value of total assets at beginning of year .....	\$.1,000.. 6 796 670
Production workers on March 15 .....	number.. 71 632	Total capital expenditures (new and used) .....	\$.1,000.. 512 167
Production workers on May 15 .....	number.. 71 735	Capital expenditures for buildings and other structures (new and used) .....	\$.1,000.. 55 003
Production workers on August 15 .....	number.. 71 569	Capital expenditures for machinery and equipment (new and used) .....	\$.1,000.. 457 164
Production workers on November 15 .....	number.. 71 792	Total retirements <sup>2</sup> .....	\$.1,000.. 192 501
Production-worker hours .....	1,000.. 154 668	Gross book value of total assets at end of year .....	\$.1,000.. 7 116 336
Production-worker wages .....	\$.1,000.. 2 493 359	Total depreciation during year <sup>2</sup> .....	\$.1,000.. 428 304
Total cost of materials .....	\$.1,000.. 5 174 792	Total rental payments <sup>2</sup> .....	\$.1,000.. 40 906
Cost of materials, parts, containers, etc., consumed .....	\$.1,000.. 4 126 132	Buildings and other structures rental payments <sup>2</sup> .....	\$.1,000.. 8 567
Cost of resales .....	\$.1,000.. 181 219	Machinery and equipment rental payments <sup>2</sup> .....	\$.1,000.. 32 339
Cost of fuels .....	\$.1,000.. 224 304	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$.1,000.. 30 119
Cost of purchased electricity .....	\$.1,000.. 422 250	Response coverage ratio <sup>4</sup> .....	percent.. 79
Cost of contract work .....	\$.1,000.. 220 887	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$.1,000.. 215 776
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 8 946 469	Response coverage ratio <sup>4</sup> .....	percent.. 79
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. D	Cost of purchased communications services <sup>3</sup> .....	\$.1,000.. 13 751
Total value of shipments .....	\$.1,000.. 12 266 373	Response coverage ratio <sup>4</sup> .....	percent.. 79
Primary products value of shipments .....	\$.1,000.. 11 754 190	Cost of purchased legal services <sup>3</sup> .....	\$.1,000.. 12 296
Secondary products value of shipments .....	\$.1,000.. 268 159	Response coverage ratio <sup>4</sup> .....	percent.. 79
Total miscellaneous receipts .....	\$.1,000.. 244 024	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$.1,000.. 5 022
Value of resales .....	\$.1,000.. 208 903	Response coverage ratio <sup>4</sup> .....	percent.. 79
Contract receipts .....	\$.1,000.. 13 376	Cost of purchased advertising services <sup>3</sup> .....	\$.1,000.. 3 779
Other miscellaneous receipts .....	\$.1,000.. 21 745	Response coverage ratio <sup>4</sup> .....	percent.. 79
Primary products specialization ratio .....	percent.. 97	Cost of purchased software and other data processing services <sup>3</sup> .....	\$.1,000.. 8 450
Value of primary products shipments made in all industries .....	\$.1,000.. 11 963 222	Response coverage ratio <sup>4</sup> .....	percent.. 79
Value of primary products shipments made in this industry .....	\$.1,000.. 11 754 190	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$.1,000.. 53 889
Value of primary products shipments made in other industries .....	\$.1,000.. 209 032	Response coverage ratio <sup>4</sup> .....	percent.. 79
Coverage ratio .....	percent.. 98		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331511, IRON FOUNDRIES</b>												
<b>All establishments</b> .....	-	<b>696</b>	<b>456</b>	<b>86 306</b>	<b>3 231 109</b>	<b>71 682</b>	<b>154 668</b>	<b>2 493 359</b>	<b>7 092 873</b>	<b>5 174 792</b>	<b>12 266 373</b>	<b>512 167</b>
Establishments with 1 to 4 employees .....	9	113	-	238	6 572	197	330	4 921	12 199	9 803	21 973	1 162
Establishments with 5 to 9 employees .....	8	59	-	386	11 403	317	548	8 415	22 626	18 283	40 832	1 950
Establishments with 10 to 19 employees .....	5	68	-	923	24 389	750	1 217	16 949	52 590	33 201	86 309	3 420
Establishments with 20 to 49 employees .....	2	139	139	4 516	131 294	3 716	7 385	93 074	268 402	147 837	415 451	23 300
Establishments with 50 to 99 employees .....	1	106	106	7 930	223 974	6 506	13 034	163 404	453 719	280 874	733 498	35 175
Establishments with 100 to 249 employees .....	-	123	123	19 523	631 488	15 876	33 904	453 716	1 539 224	930 739	2 466 848	111 752
Establishments with 250 to 499 employees .....	-	53	53	18 386	594 841	15 185	32 660	442 357	1 437 166	1 014 591	2 452 676	93 181
Establishments with 500 to 999 employees .....	-	27	27	18 061	719 547	14 994	32 891	573 280	1 753 626	1 224 716	2 977 081	88 169
Establishments with 1,000 to 2,499 employees .....	-	7	7	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	1	1	D	D	D	D	D	D	D	D	D
Administrative records <sup>2</sup> .....	9	196	-	1 210	30 223	1 011	1 509	22 614	52 003	43 183	95 189	5 569

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331511</b>	<b>Iron foundries</b> .....	<b>696</b>	<b>86 306</b>	<b>3 231 109</b>	<b>71 682</b>	<b>154 668</b>	<b>2 493 359</b>	<b>7 092 873</b>	<b>5 174 792</b>	<b>12 266 373</b>	<b>512 167</b>
3315111	Ductile iron pressure pipe and fittings .....	32	8 908	325 379	6 946	15 526	228 776	721 816	881 194	1 620 652	50 937
3315113	Other ductile iron castings .....	130	21 898	705 308	17 951	38 782	533 264	1 580 376	1 098 862	2 682 184	107 875
3315115	Cast iron pressure pipe and fittings ..	15	488	12 835	402	909	9 577	26 420	10 812	37 208	1 307
3315117	Cast iron soil pipe and fittings, all sizes .....	15	2 548	92 287	2 142	4 679	71 250	277 802	162 257	432 359	19 592
3315119	Other gray iron castings .....	279	47 996	1 933 628	40 476	87 521	1 520 994	4 171 455	2 826 033	6 979 905	315 098
331511A	Standard malleable iron castings ....	12	2 127	100 061	1 810	3 784	83 051	198 133	107 753	309 539	8 186
331511C	Pearlitic malleable iron castings .....	4	454	12 783	380	794	9 707	22 643	17 373	39 936	751
331511E	Molds and stools for heavy steel ingots .....	11	603	16 844	503	1 075	12 807	39 204	24 753	63 811	2 520

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331511</b>	<b>Iron foundries</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>11 963 222</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3315111	Ductile iron pressure pipe and fittings	N	X	X	1 542 242	N	X	X	1 125 531
33151111	Ductile iron pressure pipes and iron-fittings, all sizes	N	X	X	646 925	N	X	X	N
3315111106	Ductile iron pressure pipe, 14 in. or more (inside diameter)	9	X	P449.1	278 864	5	X	199.8	97 440
3315111111	Ductile iron fittings, less than 14 in. (inside diameter)	23	X	S	286 150	22	X	68.9	106 776
3315111116	Ductile iron fittings, 14 in. or more (inside diameter)	13	X	P40.3	81 911	12	X	20.6	43 282
33151112	Ductile iron pressure pipes and fittings, less than 14 in.	N	X	X	895 317	N	X	X	N
3315111201	Ductile iron pressure pipe, less than 14 in. (inside diameter)	16	X	1 476.3	895 317	11	X	S	878 033
3315111Y	Ductile iron pressure pipe and fittings, nsk	N	X	X	-	N	X	X	N
3315111YVW	Ductile iron pressure pipe and fittings, nsk	N	X	X	-	N	X	X	-
3315113	Other ductile iron castings	N	X	X	3 514 724	N	X	X	1 778 380
33151131	Other ductile iron castings for automotive uses	N	X	X	1 624 367	N	X	X	N
3315113101	Other ductile iron castings for automotive uses	45	X	P1 237.1	1 624 367	49	X	925.3	1 028 850
33151132	Other ductile iron castings for all other uses	N	X	X	1 890 357	N	X	X	N
3315113206	Other ductile iron castings for construction and utility uses	58	X	P104.5	167 905	40	X	46.9	71 338
3315113211	Other ductile iron castings for valve uses	48	X	S	146 282	35	X	P28.1	57 727
3315113216	Other ductile iron castings for machinery uses	114	X	P274.4	413 977	105	X	186.4	283 429
3315113221	Other ductile iron castings for all other uses, including electric and electronic equipment uses, heat-resistant parts, (including coke oven door parts)	129	X	S	1 162 193	98	X	P197.1	328 098
3315113Y	Other ductile iron castings, nsk	N	X	X	-	N	X	X	N
3315113YVW	Other ductile iron castings, nsk	N	X	X	-	N	X	X	8 938
3315115	Cast iron pressure pipe and fittings	N	X	X	58 202	N	X	X	46 767
33151151	Cast iron pressure pipe fittings, all sizes	N	X	X	58 202	N	X	X	N
3315115101	Cast iron pressure pipe, less than 14 in. (inside diameter)	12	X	X	26 139	6	X	X	5 699
3315115106	Cast iron pressure pipe, 14 in. or more (inside diameter)	6	X	X	3 175	3	X	X	1 932
3315115111	Cast iron pressure pipe fittings, less than 14 in. (inside diameter)	17	X	P17.9	23 394	11	X	20.2	27 574
3315115116	Cast iron pressure pipe fittings, 14 in. or more (inside diameter)	9	X	S	5 494	7	X	11.8	9 384
3315115Y	Cast iron pressure pipe and fittings, nsk	N	X	X	-	N	X	X	N
3315115YVW	Cast iron pressure pipe and fittings, nsk	N	X	X	-	N	X	X	2 178
3315117	Cast iron soil pipe and fittings, all sizes	N	X	X	254 152	N	X	X	189 059
33151171	Cast iron soil pipe fittings, all sizes	N	X	X	254 152	N	X	X	N
3315117101	Cast iron soil pipe, 3 in. or less (inside diameter)	3	X	D	D	7	X	P61.0	37 191
3315117106	Cast iron soil pipe, more than 3 in. up to but not including 5 in. (inside diameter)	4	X	D	D	6	X	S	48 098
3315117111	Cast iron soil pipe, 5 in. or more (inside diameter)	6	X	S	76 663	8	X	S	35 742
3315117116	Cast iron soil pipe fittings (including special fittings), 3 in. or less (inside diameter)	5	X	P11.0	16 427	11	X	P17.3	21 886
3315117121	Cast iron soil pipe fittings (including special fittings), more than 3 in. up to but not including 5 in. (inside diameter)	7	X	S	64 418	10	X	S	26 256
3315117126	Cast iron soil pipe fittings (including special fittings), 5 in. or more (inside diameter)	6	X	S	18 554	7	X	S	17 562
3315117Y	Cast iron soil pipe and fittings, all sizes, nsk	N	X	X	-	N	X	X	N
3315117YVW	Cast iron soil pipe and fittings, all sizes, nsk	N	X	X	-	N	X	X	2 324
3315119	Other gray iron castings	N	X	X	6 081 620	N	X	X	3 908 916
33151191	Other gray iron castings for all other uses	N	X	X	3 559 769	N	X	X	N
3315119101	Gray iron rolls for rolling mills	12	X	S	177 995	13	X	P91.1	119 403
3315119111	Other gray iron castings for construction and utility uses	86	X	P692.4	872 277	92	X	P444.2	490 155
3315119116	Other gray iron castings for all other uses	276	X	P2 338.3	2 509 497	285	X	1 302.8	1 380 920
33151192	Other gray iron castings for automotive uses	N	X	X	2 521 851	N	X	X	N
3315119206	Other gray iron castings for automotive uses	54	X	S	2 521 851	59	X	3 508.0	1 881 737

See footnotes at end of table.

**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331511</b>	<b>Iron foundries—Con.</b>								
3315119	Other gray iron castings—Con.								
3315119Y	Other gray iron castings, nsk	N	X	X	—	N	X	X	N
3315119YWW	Other gray iron castings, nsk	N	X	X	—	N	X	X	36 701
331511A	Standard malleable iron castings	N	X	X	205 659	N	X	X	188 739
331511A1	Standard malleable iron castings	N	X	X	205 659	N	X	X	N
331511A100	Standard malleable iron castings . . . . .1,000 s tons	20	X	S	205 659	23	X	102.4	188 739
331511C	Pearlitic malleable iron castings	N	X	X	156 887	N	X	X	105 467
331511C3	Pearlitic malleable iron castings	N	X	X	156 887	N	X	X	N
331511C300	Pearlitic malleable iron castings . . . . .1,000 s tons	12	X	S	156 887	12	X	92.8	105 467
331511E	Molds and stools for heavy steel ingots	N	X	X	54 305	N	X	X	112 136
331511E2	Molds and stools for heavy steel ingots	N	X	X	54 305	N	X	X	N
331511E200	Molds and stools for heavy steel ingots . . . . .1,000 s tons	13	X	S	54 305	10	X	285.4	112 136
331511W	Iron foundries, nsk, total	N	X	X	95 431	N	X	X	N
331511WY	Iron foundries, nsk, total	N	X	X	95 431	N	X	X	N
331511WYWW	Iron foundries, nsk, for nonadministrative-record establishments	N	X	X	3 199	N	X	X	N
331511WYWY	Iron foundries, nsk, for administrative-record establishments	N	X	X	92 232	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3315111</b>	<b>DUCTILE IRON PRESSURE PIPE AND FITTINGS</b>		
	United States	<b>1 542 242</b>	<b>1 125 531</b>
	Alabama	701 798	578 230
	New Jersey	190 486	143 761
	Texas	99 387	N
<b>3315113</b>	<b>OTHER DUCTILE IRON CASTINGS</b>		
	United States	<b>3 514 724</b>	<b>1 778 380</b>
	Alabama	208 741	90 753
	Arkansas	5 401	N
	California	56 715	21 029
	Connecticut	7 106	N
	Illinois	227 668	199 681
	Indiana	199 152	102 042
	Iowa	69 622	7 174
	Kansas	44 963	22 622
	Massachusetts	5 445	N
	Michigan	202 614	94 449
	Minnesota	83 307	35 109
	Missouri	19 665	N
	Ohio	692 270	327 500
	Oregon	11 066	N
	Pennsylvania	228 513	80 146
	Tennessee	125 868	80 979
	Texas	127 902	49 897
	Washington	3 437	N
	Wisconsin	693 515	345 859
<b>3315115</b>	<b>CAST IRON PRESSURE PIPE AND FITTINGS</b>		
	United States	<b>58 202</b>	<b>46 767</b>
	Michigan	12 349	N
	Ohio	4 555	N
	Texas	12 160	N
<b>3315117</b>	<b>CAST IRON SOIL PIPE AND FITTINGS, ALL SIZES</b>		

See footnotes at end of table.



**Table 6b. Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3315117</b>	<b>CAST IRON SOIL PIPE AND FITTINGS, ALL SIZES—Con.</b>		
	United States .....	<b>254 152</b>	<b>189 059</b>
<b>3315119</b>	<b>OTHER GRAY IRON CASTINGS</b>		
	United States .....	<b>6 081 620</b>	<b>3 908 916</b>
	Alabama .....	46 256	65 835
	Arkansas .....	17 007	14 830
	California .....	67 094	47 564
	Georgia .....	91 982	52 664
	Illinois .....	341 330	238 248
	Indiana .....	921 913	587 128
	Iowa .....	208 038	161 210
	Kansas .....	44 040	26 047
	Massachusetts .....	38 255	21 159
	Michigan .....	1 022 750	625 093
	Minnesota .....	47 405	28 626
	Missouri .....	52 575	N
	New Jersey .....	23 099	12 003
	New York .....	12 860	11 563
	North Carolina .....	4 169	15 400
	Ohio .....	1 294 048	804 656
	Oklahoma .....	19 441	17 303
	Pennsylvania .....	281 283	197 908
	Rhode Island .....	5 745	N
	Tennessee .....	202 410	142 220
	Texas .....	187 090	98 899
	Virginia .....	58 409	57 536
	Washington .....	29 142	7 289
	Wisconsin .....	796 123	443 722
<b>331511A</b>	<b>STANDARD MALLEABLE IRON CASTINGS</b>		
	United States .....	<b>205 659</b>	<b>188 739</b>
	Wisconsin .....	21 241	26 572
<b>331511C</b>	<b>PEARLITIC MALLEABLE IRON CASTINGS</b>		
	United States .....	<b>156 887</b>	<b>105 467</b>
	Illinois .....	10 920	N
<b>331511E</b>	<b>MOLDS AND STOOLS FOR HEAVY STEEL INGOTS</b>		
	United States .....	<b>54 305</b>	<b>112 136</b>
	Pennsylvania .....	13 191	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331511</b>	<b>IRON FOUNDRIES</b>				
33120045	Pig iron shapes and forms (except silvery iron, castings, forgings, and fabricated metal products) .....	X	211 812	X	N
33111205	Ferromanganese shapes and forms (except castings, forgings, and fabricated metal products) .....	X	35 163	X	N
33111203	Ferromanganese, silicomanganese, and manganese shapes and forms (exc. castings, forgings, and fabricated metal products) .....	X	58 054	X	N
33111207	Ferrosilicon (more than 8 percent silicon) shapes and forms (except castings, forgings, and fabricated metal products) .....	X	206 810	X	N
33100013	All other ferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	300 905	X	N
33141925	Nickel and nickel-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	36 751	X	N
33141947	Cobalt-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	N
33141905	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	N
00190023	Iron and steel scrap, excluding home scrap .....	X	1 096 216	X	N
00190082	All other purchased scrap, excluding home scrap .....	X	136 456	X	N
32712400	Clay refractories .....	X	41 386	X	N
32791001	Grinding wheels and other abrasive products, except industrial diamonds .....	X	44 164	X	N
32712500	Nonclay refractories .....	X	36 763	X	N
32700009	All other stone, clay, glass, and concrete products .....	X	14 664	X	N
33299700	Industrial patterns .....	X	49 610	X	N

See footnotes at end of table.

**Table 7. Materials Consumed by Kind: 1997 and 1992—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331511</b>	<b>IRON FOUNDRIES—Con.</b>				
33350003	Industrial dies, molds, jigs, and fixtures . . . . .	X	20 207	X	N
001900A5	All other industrial and commercial machinery and computer equipment . . . . .	X	39 103	X	N
21232005	Sand . . . . .	X	213 911	X	N
00970099	All other materials and components, parts, containers, and supplies . . . . .	X	1 408 484	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. . . . .	X	63 916	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.



## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331511 IRON FOUNDRIES**

This U.S. industry comprises establishments primarily engaged in pouring molten pig iron or iron alloys into molds to manufacture castings, (e.g., cast iron man-hole covers, cast iron pipe, cast iron skillets). Establishments in this industry purchase iron made in other establishments.

The data published with NAICS code 331511 include the following SIC industries:

- 3321 Gray iron foundries
- 3322 Malleable iron foundries

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.



# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.

# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33111111	33121 pt	33121 pt	3312223	33152 pt	33152 pt	3313161	33541	33541
3311111101	331215	3312111 pt	3312223101	3315251	3315201 pt	3313161101	3354115	3354115
3311111103	3312116	3312112 pt	3312223103	3315252	3315203 pt	3313161206	3354118	3354118
3311111105	3312153	3312151 pt	3312223105	3315253	3315205 pt	3313161311	3354125	3354125
3311111107	3312173	3312171 pt	3312223107	3315254	3315207 pt	3313161416	3354128	3354128
3311111109 pt	3312196 pt	3312131 pt	3312223109	3315255	3315209 pt	3313161YVW	3354100	3354100
3311111109 pt	3312196 pt	3312197 pt	3312223111 pt	3315214 pt	3315210 pt	3313163	33542	33542
3311111111	3312191	3312191	3312223111 pt	3315214 pt	3315213 pt	3313163101	3354261	3354261
3311111113	3312192	3312192	3312223113	3315256	3315216 pt	3313163106	3354263	3354263
3311111115 pt	3312195 pt	3312193	3312223122	3315257	3315222 pt	3313163YVW	3354200	3354200
3311111115 pt	3312195 pt	3312194	3312223124	3315258	3315223 pt	331316W	33540	33540
3311111117	3312198	3312198	3312223126	3315259	3315225 pt	331316WYVW	3354000	3354000
3311111YVW	3312100 pt	3312100 pt	3312223128	3315260	3315230 pt	331316WYVW	3354002	3354002
331112	33991 pt	33991 pt	3312223YVW	3315200 pt	3315200 pt	3313191	33551	33551
331112100 pt	3399100 pt	3399100 pt	3312225	33155	33155	3313191100	3355100	3355100
331112100 pt	3399155	3399155	3312225100	3315500	3315500	3313193	33552	33552
33111113	33122	33122	3312227	33156	33156	3313193100 pt	3355200 pt	3355200
3311113100	3312200	3312200	3312227101	3315613	3315613	3313193100 pt	3355200 pt	3355222
3311115	33123	33123	3312227110	3315621	3315621	3313193100 pt	3355200 pt	3355225
3311115100	3312300	3312300	3312227112 pt	3315640 pt	3315635	3313197	33571	33571
3311117	33124	33124	3312227112 pt	3315640 pt	3315671	3313197100	3357100	3357100
3311117100	3312400	3312400	3312227YVW	3315600	3315600	3313199	33553	33553
3311119	33125	33125	3312229	33157	33157	3313199100	3355300	3355300
3311119100	3312500	3312500	3312229100	3315700	3315700	331319A	33574 pt	33575 pt
331111B	33126	33126	331222B	33159	33159	331319A100 pt	3357401	3357500 pt
331111B100	3312600	3312600	331222B110	3315951	3315951	331319A100 pt	3357400 pt	3357500 pt
331111D	33127	33127	331222B120	3315955	3315955	331319C	33554	33554
331111D100	3312700	3312700	331222B122	3315963	3315963	331319C100	3355400	3355400
331111F	33128	33128	331222B124	3315971	3315971	331319W pt	33550	33550
331111F100	3312800	3312800	331222B126 pt	3315998 pt	3315942	331319W pt	33570 pt	33570 pt
331111H	3312A	3312A	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3355000	3355000
331111H101	3312A17	3312A17	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3357000 pt	3357000 pt
331111H203	3312A26	3312A26	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3355002	3355002
331111HYVW	3312A00	3312A00	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3357002 pt	3357002 pt
331111J	3312B	3312B	331222BYVW	3315900	3315900	3314110 pt	33310	33310
331111J101	3312B62	3312B62	331222W	33150	33150	3314110 pt	33311	33311
331111J203	3312B66	3312B66	331222WYVW	3315000 pt	3315000 pt	33141110 pt	33312	33312
331111JYVW	3312B00	3312B00	331222WYVW	3315002 pt	3315002 pt	3314110101	3331100	3331100
331111L	3312C	3312C	3313110 pt	28190 pt	28190 pt	3314110106	3331217	3331217
331111L100	3312C00	3312C00	3313110 pt	28195	28195	3314110111	3331230	3331230
331111W pt	33120 pt	33120 pt	3313110100	2819500	2819500	3314110YVW pt	3331000	3331000
331111W pt	33990 pt	33990 pt	3313110YVW	2819000 pt	2819000 pt	3314110YVW pt	3331200	3331200
331111WYVW pt	3312000 pt	3312000 pt	3313110YVW	2819002 pt	2819002 pt	3314110YVW pt	3331002	3331002
331111WYVW pt	3399000 pt	3399000 pt	3313121	33347	33347	3314191	33391	33391
331111WYVW pt	3312002 pt	3312002 pt	3313121100	3334700	3334700	3314191100	3339100	3339100
331111WYVW pt	3399002 pt	3399002 pt	3313123	33348	33348	3314193	33392	33392
3311121	33132	33132	3313123100	3334800	3334800	3314193101 pt	3339231 pt	3339234
3311121100	3313200	3313200	331312W	33340	33340	3314193101 pt	3339231 pt	3339244
3311123	33133	33133	331312WYVW	3334000	3334000	3314193101 pt	3339231 pt	3339255
3311123100	3313300	3313300	331312WYVW	3334002	3334002	3314193111	3339251	3339251
3311125	33134 pt	33134 pt	3313141	33417	33417	3314193YVW	3339200	3339200
3311125101	3313416	3313415 pt	3313141100	3341700	3341700	3314197	33395	33395
3311125203 pt	3313487 pt	3313408	3313143	33418	33418	3314197101	3339525	3339525
3311125203 pt	3313487 pt	3313489 pt	3313143100	3341800	3341800	3314197206	3339535	3339535
3311125305	3313497	3313498 pt	3313145	33991 pt	33991 pt	3314197311	3339545	3339545
3311125YVW	3313400 pt	3313400 pt	3313145100	3399111	3399111	3314197YVW	3339500	3339500
331112W	33130 pt	33130 pt	331314W pt	33410 pt	33410 pt	3314199	33398	33398
331112WYVW	3313000 pt	3313000 pt	331314W pt	33990 pt	33990 pt	3314199101	3339805	3339805
331112WYVW	3313002 pt	3313002 pt	331314WYVW pt	3341000 pt	3341000 pt	3314199103	3339833	3339833
3312100	33170	33170	331314WYVW pt	3399000 pt	3399000 pt	3314199106 pt	3339851 pt	3339843
3312100100	3317000 pt	3317000 pt	331314WYVW pt	3341002 pt	3341002 pt	3314199106 pt	3339851 pt	3339863
3312100YVW	3317000 pt	3317000 pt	331314WYVW pt	3399002 pt	3399002 pt	3314199121	3339873	3339873
3312100YVW	3317002	3317000 pt	3313151	33531	33531	3314199126 pt	3339889 pt	3339871
331221	33167	33167	3313151101	3353113	3353113	3314199126 pt	3339889 pt	3339889
3312211100	3316700	3316700	3313151106	3353115	3353115	3314199131	3339899	3339899
3312213	33168	33168	3313151YVW	3353100	3353100	3314199YVW	3339800	3339800
3312213100	3316800	3316800	3313153	33532	33532	331419W	33390	33390
331221W	33160	33160	3313153101	3353223	3353223	331419WYVW	3339000	3339000
331221WYVW	3316000	3316000	3313153106	3353225	3353225	331419WYVW	3339002	3339002
331221WYVW	3316002	3316002	3313153211	3353227	3353227	3314211	33511	33511
3312221	33170	33170	3313153216	3353231	3353231	3314211101	3351111	3351111
3312221100	3317000 pt	3317000 pt	3313153221	3353233	3353233	3314211206	3351131	3351131
331222100100	3317000 pt	3317000 pt	3313153221	3353231	3353231	3314211YVW	3351100	3351100
331222100YVW	3317000 pt	3317000 pt	3313153221	3353233	3353233	3314213	33513	33513
331222100YVW	3317002	3317000 pt	3313153YVW	3353200	3353200	3314213101	3351311	3351311
3312221222	3315134	3315134	3313155	33533	33533	3314213206	3351332	3351332
3312221YVW	3315100	3315100	3313155100	3353300	3353300	3314213YVW	3351300	3351300
3312221YVW	3315100	3315100	331315W	33530 pt	33530 pt	3314217	33514	33514
3312221110	3315113	3315113	331315WYVW	3353000 pt	3353000 pt	3314217101	3351413	3351413
3312221112	3315115	3315115	331315WYVW	3353002 pt	3353002 pt	3314217206	3351435	3351435
3312221214	3315125	3315125	331315YVW	3353002 pt	3353002 pt	3314217YVW	3351400	3351400
3312221222	3315134	3315134						
3312221YVW	3315100	3315100						

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3314219	33515	33515	3314921	33991 pt	33991 pt	331511A	33221	33221
3314219101	3351516	3351516	3314921101	3399166	3399166	331511A100	3322100	3322100
3314219211	3351536	3351536	3314921206	3399177	3399177	331511C	33222	33222
3314219306	3351518	3351518	3314921311	3399186	3399186	331511C300	3322200	3322200
3314219316	3351538	3351538	3314921416 pt	3399189 pt	3399187	331511E	33216	33216
3314219YVW	3351500	3351500	3314921416 pt	3399189 pt	3399188	331511E200	3321600	3321600
331421W	33510	33510	3314921426	3399191	3399191	331511W pt	33210	33210
331421WYWW	3351000	3351000	3314921431	3399198	3399198	331511W pt	33220	33220
331421WYWW	3351002	3351002	3314921YVW	3399100 pt	3399100 pt	331511W pt	33220	33220
3314221	33572	33572	3314923	33413	33413	331511WYWW pt	3321000	3321000
3314221101	3357211	3357211	3314923101	3341311	3341311	331511WYWW pt	3322000	3322000
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331422W	33570 pt	33570 pt	3314927101 pt	3341431 pt	3341434	3315120YWW	3324000	3324000
331422WYWW	3357000 pt	3357000 pt	3314927101 pt	3341431 pt	3341444	3315120YWW	3324002	3324002
331422WYWW	3357002 pt	3357002 pt	3314927206	3341411	3341411	3315131	33252	33252
3314230 pt	33410 pt	33410 pt	3314927YVW	3341400	3341400	3315131101	3325211	3325211
3314230 pt	33412	33412	3314929	33415	33415	3315131206	3325215	3325215
3314230 pt	33990 pt	33990 pt	3314929101	3341525	3341525	3315131211	3325219	3325219
3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315131YVW	3325200	3325200
3314230101	3341224	3341224	3314929211	3341545	3341545	3315133	33254	33254
3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133101	3325421	3325421
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3314230311	3341231	3341231	331492A pt	33416	33416	3315133YVW	3325400	3325400
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3314911101	3356161	3356161	331492AYVW pt	3313400 pt	3313400 pt	331513WYWW	3325002	3325002
3314911106	3356164	3356164	331492AYVW pt	3341600	3341600	3315210	33630	33630
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3314919	33563	33563	3315111YVW	3321100	3321100	3315240311	3365051	3365051
3314919101	3356381	3356381	3315113	33212	33212	3315240416	3365073	3365073
3314919106	3356383	3356383	3315113101	3321222	3321222	3315240421	3365061	3365061
3314919111	3356386	3356386	3315113206	3321224	3321224	3315240YVW	3365000	3365000
3314919116	3356391	3356391	3315113211	3321231	3321231	3315240YVW	3365002	3365002
3314919YVW	3356300	3356300	3315113216	3321233	3321233	3315250	33660	33660
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331491C106	3356951	3356951	3315115	33217	33217	3315250221	3366025	3366025
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331491C216	3356993	3356993	3315151YVW	3321700	3321700	3315250536	3366041	3366041
331491CYVW	3356900	3356900	3315117	33218	33218	3315250541	3366051	3366051
331491E	33576	33576	3315117101	3321822	3321822	3315250546	3366061	3366061
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331491G	33577	33577	3315117111	3321827	3321827	3315250YVW	3366000	3366000
331491G100	3357700	3357700	3315117116	3321830	3321830	3315250YVW	3366002	3366002
331491W pt	33560	33560	3315117121	3321833	3321833	3315280	33690	33690
331491W pt	33570 pt	33570 pt	3315117126	3321836	3321836	3315280116	3369085	3369085
331491WYVW pt	3356000	3356000	3315117YVW	3321800	3321800	3315280201	3369011	3369011
331491WYVW pt	3357000 pt	3357000 pt	3315119	33219	33219	3315280206	3369015	3369015
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331491WYVW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099 pt
331491WYVW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099 pt
			3315119206	3321939	3321939	3315280YVW	3369000	3369000
			3315119YVW	3321900	3321900	3315280YVW	3369002	3369002



# Steel Investment Foundries

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



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Economics and Statistics Administration  
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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director

---





**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.



**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331512</b>	<b>Steel investment foundries . . . .</b>	<b>145</b>	<b>159</b>	<b>22 673</b>	<b>669 452</b>	<b>18 418</b>	<b>36 870</b>	<b>494 655</b>	<b>1 656 130</b>	<b>715 264</b>	<b>2 341 737</b>	<b>76 396</b>
332400	Steel investment foundries . . . .	N	159	22 673	669 452	18 418	36 870	494 655	1 656 130	715 264	2 341 737	76 396

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331512, STEEL INVESTMENT FOUNDRIES</b>												
United States . . . . .	-	159	116	22 673	669 452	18 418	36 870	494 655	1 656 130	715 264	2 341 737	76 396
Alabama . . . . .	-	4	3	756	18 118	515	1 045	10 636	66 373	18 556	84 900	1 986
California . . . . .	-	19	14	2 388	61 965	2 052	4 015	46 696	181 466	86 299	260 207	2 769
Indiana . . . . .	-	6	5	1 026	36 349	800	1 656	24 882	86 956	46 126	130 745	3 808
Michigan . . . . .	-	18	10	1 629	57 868	1 391	2 834	46 035	160 648	69 581	224 996	6 961
Ohio . . . . .	-	16	13	2 586	80 277	2 152	4 337	59 884	154 489	84 364	237 966	8 223
Pennsylvania . . . . .	-	12	10	1 096	30 809	947	1 920	22 096	79 537	34 508	112 074	2 100
Texas . . . . .	-	14	9	1 863	50 193	1 549	3 284	37 372	141 548	61 160	200 259	9 448
Wisconsin . . . . .	-	10	9	1 452	42 072	1 198	2 315	31 244	95 148	44 556	139 727	7 323

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331512, STEEL INVESTMENT FOUNDRIES</b>		<b>331512, STEEL INVESTMENT FOUNDRIES—Con.</b>	
Companies <sup>1</sup> .....	number.. 145	Value added .....	\$1,000.. 1 656 130
All establishments .....	number.. 159	Total inventories, beginning of year .....	\$1,000.. 276 155
Establishments with 1 to 19 employees .....	number.. 43	Finished goods inventories, beginning of year .....	\$1,000.. 39 256
Establishments with 20 to 99 employees .....	number.. 67	Work-in-process inventories, beginning of year .....	\$1,000.. 145 256
Establishments with 100 employees or more .....	number.. 49	Materials and supplies inventories, beginning of year .....	\$1,000.. 91 643
All employees .....	number.. 22 673	Total inventories, end of year .....	\$1,000.. 299 118
Total compensation <sup>2</sup> .....	\$1,000.. 867 613	Finished goods inventories, end of year .....	\$1,000.. 49 418
Annual payroll .....	\$1,000.. 669 452	Work-in-process inventories, end of year .....	\$1,000.. 164 751
Total fringe benefits .....	\$1,000.. 198 161	Materials and supplies inventories, end of year .....	\$1,000.. 84 949
Production workers, average for year .....	number.. 18 418	Gross book value of total assets at beginning of year .....	\$1,000.. 872 889
Production workers on March 15 .....	number.. 17 648	Total capital expenditures (new and used) .....	\$1,000.. 76 396
Production workers on May 15 .....	number.. 18 166	Capital expenditures for buildings and other structures	
Production workers on August 15 .....	number.. 18 619	(new and used) .....	\$1,000.. 11 416
Production workers on November 15 .....	number.. 19 239	Capital expenditures for machinery and equipment (new	
Production-worker hours .....	1,000.. 36 870	and used) .....	\$1,000.. 64 980
Production-worker wages .....	\$1,000.. 494 655	Total retirements <sup>2</sup> .....	\$1,000.. 17 341
Total cost of materials .....	\$1,000.. 715 264	Gross book value of total assets at end of year .....	\$1,000.. 931 944
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 533 321	Total depreciation during year <sup>2</sup> .....	\$1,000.. 50 845
Cost of resales .....	\$1,000.. 12 893	Total rental payments <sup>2</sup> .....	\$1,000.. 15 223
Cost of fuels .....	\$1,000.. 20 156	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 7 415
Cost of purchased electricity .....	\$1,000.. 50 513	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 7 808
Cost of contract work .....	\$1,000.. 98 381	Cost of purchased services for the repair of buildings and other	
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 866 668	structures <sup>3</sup> .....	\$1,000.. 6 451
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. D	Response coverage ratio <sup>4</sup> .....	percent.. 89
Total value of shipments .....	\$1,000.. 2 341 737	Cost of purchased services for the repair of machinery and	
Primary products value of shipments .....	\$1,000.. 2 163 671	equipment <sup>3</sup> .....	\$1,000.. 39 039
Secondary products value of shipments .....	\$1,000.. 156 632	Response coverage ratio <sup>4</sup> .....	percent.. 89
Total miscellaneous receipts .....	\$1,000.. 21 434	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 3 398
Value of resales .....	\$1,000.. 14 559	Response coverage ratio <sup>4</sup> .....	percent.. 89
Contract receipts .....	\$1,000.. 2 663	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 2 906
Other miscellaneous receipts .....	\$1,000.. 4 212	Response coverage ratio <sup>4</sup> .....	percent.. 89
Primary products specialization ratio .....	percent.. 93	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 2 228
Value of primary products shipments made in all industries .....	\$1,000.. 2 231 573	Response coverage ratio <sup>4</sup> .....	percent.. 89
Value of primary products shipments made in this industry .....	\$1,000.. 2 163 671	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 4 077
Value of primary products shipments made in other		Response coverage ratio <sup>4</sup> .....	percent.. 89
industries .....	\$1,000.. 67 902	Cost of purchased software and other data processing	
Coverage ratio .....	percent.. 96	services <sup>3</sup> .....	\$1,000.. 6 069
		Response coverage ratio <sup>4</sup> .....	percent.. 89
		Cost of purchased refuse removal (including hazardous waste)	
		services <sup>3</sup> .....	\$1,000.. 6 638
		Response coverage ratio <sup>4</sup> .....	percent.. 89

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331512, STEEL INVESTMENT FOUNDRIES</b>												
<b>All establishments .....</b>	-	<b>159</b>	<b>116</b>	<b>22 673</b>	<b>669 452</b>	<b>18 418</b>	<b>36 870</b>	<b>494 655</b>	<b>1 656 130</b>	<b>715 264</b>	<b>2 341 737</b>	<b>76 396</b>
Establishments with 1 to 4 employees .....	8	20	-	43	1 240	39	78	991	2 412	1 115	3 515	110
Establishments with 5 to 9 employees .....	9	4	-	24	499	20	34	388	1 115	542	1 652	56
Establishments with 10 to 19 employees .....	1	19	-	275	7 580	218	395	5 138	30 665	7 185	37 775	664
Establishments with 20 to 49 employees .....	-	34	34	1 170	29 413	922	1 861	19 757	62 249	36 872	97 804	2 256
Establishments with 50 to 99 employees .....	-	33	33	2 226	56 682	1 821	3 615	39 188	129 362	56 442	182 394	4 449
Establishments with 100 to 249 employees .....	-	26	26	4 061	121 900	3 280	6 916	87 087	278 428	151 565	425 714	15 080
Establishments with 250 to 499 employees .....	-	12	12	4 402	119 254	3 761	7 566	93 678	283 418	121 473	395 278	16 576
Establishments with 500 to 999 employees .....	-	7	7	4 843	156 011	3 849	8 084	111 811	416 715	191 426	606 389	13 082
Establishments with 1,000 to 2,499 employees .....	-	4	4	5 629	176 873	4 508	8 321	136 617	451 766	148 644	591 216	24 123
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	5	32	-	209	4 806	180	298	3 828	10 491	5 009	15 454	519

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331512</b>	<b>Steel investment foundries .....</b>	<b>159</b>	<b>22 673</b>	<b>669 452</b>	<b>18 418</b>	<b>36 870</b>	<b>494 655</b>	<b>1 656 130</b>	<b>715 264</b>	<b>2 341 737</b>	<b>76 396</b>

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331512</b>	<b>Steel investment foundries</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>2 231 573</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>1 628 889</b>
3315120	Steel investment castings .....	N	X	X	2 231 573	N	X	X	1 628 889
33151201	Carbon and alloy steel investment castings .....	N	X	X	801 461	N	X	X	N
3315120101	Carbon (including low alloy) steel investment castings .....	79	X	X	524 259	60	X	X	257 079
3315120106	Alloy (excluding stainless) steel investment castings .....	56	X	X	277 202	42	X	X	150 491
33151202	Hi-temp metal investment castings (iron, nickel, or cobalt-base alloys) .....	N	X	X	987 152	N	X	X	N
3315120216	Hi-temp metal investment castings (iron, nickel, or cobalt-base alloys) 1,000 lb. ....	44	X	S	987 152	37	X	S	776 143
33151203	Stainless steel investment castings .....	N	X	X	423 426	N	X	X	N
3315120311	Stainless steel investment castings .....	103	X	X	423 426	77	X	X	347 460
3315120Y	Steel investment castings, nsk, total .....	N	X	X	19 534	N	X	X	N
3315120YWW	Steel investment castings, nsk, for nonadministrative-record establishments .....	N	X	X	-	N	X	X	85 722
3315120YWY	Steel investment castings, nsk, for administrative-record establishments .....	N	X	X	19 534	N	X	X	11 994

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331512</b>	<b>STEEL INVESTMENT FOUNDRIES</b>				
33120045	Pig iron shapes and forms (except silvery iron, castings, forgings, and fabricated metal products) .....	X	1 220	X	3 803
33111205	Ferrochromium shapes and forms (except castings, forgings, and fabricated metal products) .....	X	5 801	X	2 363
33111203	Ferromanganese, silicomanganese, and manganese shapes and forms (exc. castings, forgings, and fabricated metal products) .....	X	1 055	X	807
33111207	Ferrosilicon (more than 8 percent silicon) shapes and forms (except castings, forgings, and fabricated metal products) .....	X	717	X	1 322
33100013	All other ferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	29 489	X	17 472
33141925	Nickel and nickel-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	100 126	X	85 450
33141947	Cobalt-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	36 769	X	24 167
33141905	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	32 879	X	25 123
00190023	Iron and steel scrap, excluding home scrap .....	X	49 374	X	16 752
00190082	All other purchased scrap, excluding home scrap .....	X	2 990	X	1 857
32712400	Clay refractories .....	X	3 243	X	2 438
32791001	Grinding wheels and other abrasive products, except industrial diamonds .....	X	19 670	X	15 634
32712500	Nonclay refractories .....	X	26 592	X	12 258
32700009	All other stone, clay, glass, and concrete products .....	X	3 337	X	1 452
33299700	Industrial patterns .....	X	3 450	X	6 928
33350003	Industrial dies, molds, jigs, and fixtures .....	X	18 001	X	10 002
001900A5	All other industrial and commercial machinery and computer equipment .....	X	3 628	X	532
21232005	Sand .....	X	12 298	X	11 937
00970099	All other materials and components, parts, containers, and supplies .....	X	175 218	X	168 244
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	7 464	X	36 467

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.



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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331512 STEEL INVESTMENT FOUNDRIES**

This U.S. industry comprises establishments primarily engaged in manufacturing steel investment castings. Investment molds are formed by covering a wax shape with a refractory slurry. After the refractory slurry hardens, the wax is melted, leaving a seamless mold. Investment molds provide highly detailed, consistent castings. Establishments in this industry purchase steel made in other establishments.

The data published with NAICS code 331512 include the following SIC industry:

3324 Steel investment foundries

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic



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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.

# Appendix G.

## Comparability of Product Classes and Product Codes:

### 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3311111	33121 pt	33121 pt	331223	33152 pt	33152 pt	3313161	33541	33541
331111101	331215	331211 pt	331223101	3315251	3315201 pt	3313161101	3354115	3354115
3311111103	3312116	3312112 pt	331223103	3315252	3315203 pt	3313161206	3354118	3354118
3311111105	3312153	3312151 pt	331223105	3315253	3315205 pt	3313161311	3354125	3354125
3311111107	3312173	3312171 pt	331223107	3315254	3315207 pt	3313161416	3354128	3354128
3311111109 pt	3312196 pt	3312131 pt	331223109	3315255	3315209 pt	3313161YVW	3354100	3354100
3311111109 pt	3312196 pt	3312197 pt	331223111 pt	3315214 pt	3315210 pt	3313163	33542	33542
3311111111	3312191	3312191	331223111 pt	3315214 pt	3315213 pt	3313163101	3354261	3354261
3311111113	3312192	3312192	331223113	3315256	3315216 pt	3313163106	3354263	3354263
3311111115 pt	3312195 pt	3312193	331223122	3315257	3315222 pt	3313163YVW	3354200	3354200
3311111115 pt	3312195 pt	3312194	331223124	3315258	3315223 pt	331316W	33540	33540
3311111117	3312198	3312198	331223126	3315259	3315225 pt	331316WYVW	3354000	3354000
3311111YVW	3312100 pt	3312100 pt	331223128	3315260	3315230 pt	331316WYVW	3354002	3354002
			331223YVW	3315200 pt	3315200 pt	3313191	33551	33551
			331225	33155	33155	3313191100	3355100	3355100
			331225100	3315500	3315500	3313193	33552	33552
			331227	33156	33156	3313193100 pt	3355200 pt	3355200
			331227101	3315613	3315613	3313193100 pt	3355200 pt	3355222
			331227110	3315621	3315621	3313193100 pt	3355200 pt	3355225
			331227112 pt	3315640 pt	3315635	3313197	33571	33571
			331227112 pt	3315640 pt	3315671	3313197100	3357100	3357100
			331227YVW	3315600	3315600	3313199	3355300	3355300
			331229	33157	33157	3313199100	3355300	3355300
			331229100	3315700	3315700	331319A	33574 pt	33575 pt
			331222B	33159	33159	331319A100 pt	3357401	3357500 pt
			331222B110	3315951	3315951	331319A100 pt	3357400 pt	3357500 pt
			331222B120	3315955	3315955	331319C	33554	33554
			331222B122	3315963	3315963	331319C100	3355400	3355400
			331222B124	3315971	3315971	331319W pt	33550	33550
			331222B126 pt	3315998 pt	3315942	331319W pt	33570 pt	33570 pt
			331222B126 pt	3315998 pt	3315973	331319WYVW pt	3355000	3355000
			331222B126 pt	3315998 pt	3315973	331319WYVW pt	3357000 pt	3357000 pt
			331222B126 pt	3315998 pt	3315973	331319WYVW pt	3355002	3355002
			331222B126 pt	3315998 pt	3315973	331319WYVW pt	3357002 pt	3357002 pt
			331222BYVW	3315900	3315900	3314110 pt	33310	33310
			331222W	33150 pt	33150 pt	3314110 pt	33311	33311
			331222WYVW	3315000 pt	3315000 pt	3314110 pt	33312	33312
			331222WYVW	3315002 pt	3315002 pt	3314110101	3331100	3331100
			3313110 pt	28190 pt	28190 pt	3314110106	3331217	3331217
			3313110 pt	28195	28195	3314110111	3331230	3331230
			3313110100	2819500	2819500	3314110YVW pt	3331000	3331000
			3313110YVW	2819000 pt	2819000 pt	3314110YVW pt	3331200	3331200
			3313110YVW	2819002 pt	2819002 pt	3314110YVW	3331002	3331002
			3313121	33347	33347	3314191	33391	33391
			3313121100	3334700	3334700	3314191100	3339100	3339100
			3313123	33348	33348	3314193	33392	33392
			3313123100	3334800	3334800	3314193101 pt	3339231 pt	3339231
			331312W	33340	33340	3314193101 pt	3339231 pt	3339244
			331312WYVW	3334000	3334000	3314193101 pt	3339231 pt	3339255
			331312WYVW	3334002	3334002	3314193111	3339251	3339251
			3313141	33417	33417	3314193YVW	3339200	3339200
			3313141100	3341700	3341700	3314197	33395	33395
			3313143	33418	33418	3314197101	3339525	3339525
			3313143100	3341800	3341800	3314197206	3339535	3339535
			3313145	33991 pt	33991 pt	3314197311	3339545	3339545
			3313145100	3399111	3399111	3314197YVW	3339500	3339500
			331314W pt	33410 pt	33410 pt	3314199	33398	33398
			331314W pt	33410 pt	33410 pt	3314199101	3339805	3339805
			331314WYVW pt	3341000 pt	3341000 pt	3314199103	3339833	3339833
			331314WYVW pt	3399000 pt	3399000 pt	3314199106 pt	3339851 pt	3339843
			331314WYVW	3341002 pt	3341002 pt	3314199106 pt	3339851 pt	3339863
			331314WYVW	3399002 pt	3399002 pt	3314199121	3339873	3339873
			3313151	33531	33531	3314199126 pt	3339889 pt	3339871
			3313151101	3353113	3353113	3314199126 pt	3339889 pt	3339889
			3313151106	3353115	3353115	3314199131	3339899	3339899
			3313151YVW	3353100	3353100	3314199YVW	3339800	3339800
			3313153	33532	33532	331419W	33390	33390
			3313153101	3353223	3353223	331419WYVW	3339000	3339000
			3313153106	3353225	3353225	331419WYVW	3339002	3339002
			3313153211	3353227	3353227	3314211	33511	33511
			3313153216	3353231	3353231	3314211101	3351111	3351111
			3313153221	3353233	3353233	3314211206	3351131	3351131
			3313153YVW	3353200	3353200	3314211YVW	3351100	3351100
			3313155	33533	33533	3314213	33513	33513
			3313155100	3353300	3353300	3314213101	3351311	3351311
			331315W	33530 pt	33530 pt	3314213206	3351332	3351332
			331315WYVW	3353000 pt	3353000 pt	3314213YVW	3351300	3351300
			331315WYVW	3353002 pt	3353002 pt	3314217	33514	33514
						3314217101	3351413	3351413
						3314217206	3351435	3351435
						3314217YVW	3351400	3351400

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3314219	33515	33515	3314921	33991 pt	33991 pt	331511A	33221	33221
3314219101	3351516	3351516	3314921101	3399166	3399166	331511A100	3322100	3322100
3314219211	3351536	3351536	3314921206	3399177	3399177	331511C	33222	33222
3314219306	3351518	3351518	3314921311	3399186	3399186	331511C300	3322200	3322200
3314219316	3351538	3351538	3314921416 pt	3399189 pt	3399187	331511E	33216	33216
3314219YVW	3351500	3351500	3314921416 pt	3399189 pt	3399188	331511E200	3321600	3321600
331421W	33510	33510	3314921426	3399191	3399191	331511W pt	33210	33210
331421WYWW	3351000	3351000	3314921431	3399198	3399198	331511W pt	33220	33220
331421WYWW	3351002	3351002	3314921YVW	3399100 pt	3399100 pt	331511W pt	33220	33220
3314221	33572	33572	3314923	33413	33413	331511WYWW pt	3321000	3321000
3314221101	3357211	3357211	3314923101	3341311	3341311	331511WYWW pt	3322000	3322000
3314221106	3357251	3357251	3314923206	3341321	3341321	331511WYWW pt	3321002	3321002
3314221211	3357271	3357271	3314923211	3341333	3341333	331511WYWW pt	3322002	3322002
3314221216	3357281	3357281	3314923216	3341351	3341351	3315120	33240	33240
3314221YVW	3357200	3357200	3314923221	3341399	3341399	3315120101	3324063	3324063
3314223	33574 pt	33575 pt	3314923YVW	3341300	3341300	3315120106	3324064	3324064
3314223300 pt	3357402	3357500 pt	3314927	33414	33414	3315120216	3324067	3324067
3314223300 pt	3357400 pt	3357500 pt	3314927101 pt	3341431 pt	3341405	3315120311	3324066	3324066
331422W	33570 pt	33570 pt	3314927101 pt	3341431 pt	3341434	3315120YWW	3324000	3324000
331422WYWW	3357000 pt	3357000 pt	3314927101 pt	3341431 pt	3341444	3315120YWW	3324002	3324002
331422WYWW	3357002 pt	3357002 pt	3314927206	3341411	3341411	3315131	33252	33252
3314230 pt	33410 pt	33410 pt	3314927YVW	3341400	3341400	3315131101	3325211	3325211
3314230 pt	33412	33412	3314929	33415	33415	3315131206	3325215	3325215
3314230 pt	33990 pt	33990 pt	3314929101	3341525	3341525	3315131211	3325219	3325219
3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315131YVW	3325200	3325200
3314230101	3341224	3341224	3314929211	3341545	3341545	3315133	33254	33254
3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133101	3325421	3325421
3314230206	3341226	3341226	331492A pt	33134 pt	33134 pt	3315133106	3325431	3325431
3314230311	3341231	3341231	331492A pt	33416	33416	3315133YVW	3325400	3325400
3314230YVW pt	3341000 pt	3341000 pt	331492A101 pt	3313417	3313415 pt	3315135	33255	33255
3314230YVW pt	3341200	3341200	331492A101 pt	3341633	3341633	3315135101	3325551	3325551
3314230YVW pt	3399000 pt	3399000 pt	331492A106	3341635	3341635	3315135106	3325555	3325555
3314230YVW pt	3399100 pt	3399100 pt	331492A111	3341671	3341671	3315135111	3325559	3325559
3314230YVW pt	3341002 pt	3341002 pt	331492A116	3341697	3341697	3315135YVW	3325500	3325500
3314230YVW pt	3399002 pt	3399002 pt	331492A206	3313488	3313489 pt	331513W	33250	33250
3314911	33561	33561	331492A311	3313499	3313498 pt	331513WYWW	3325000	3325000
3314911101	3356161	3356161	331492AYVW pt	3313400 pt	3313400 pt	331513WYWW	3325002	3325002
3314911106	3356164	3356164	331492AYVW pt	3341600	3341600	3315210	33630	33630
3314911111	3356165	3356165	331492W pt	33130 pt	33130 pt	3315210000	3363000 pt	3363000 pt
3314911116	3356166	3356166	331492W pt	33410 pt	33410 pt	3315210YWW	3363000 pt	3363000 pt
3314911YVW	3356100	3356100	331492WYWW pt	33990 pt	33990 pt	3315220	33640	33640
3314913	33562	33562	331492WYWW pt	3313000 pt	3313000 pt	3315220101	3364011	3364011
3314913101	3356272	3356272	331492WYWW pt	3341000 pt	3341000 pt	3315220206	3364021	3364021
3314913106	3356274	3356274	331492WYWW pt	3399000 pt	3399000 pt	3315220311	3364031	3364031
3314913111	3356279	3356279	331492WYWW pt	3313002 pt	3313002 pt	3315220416	3364041	3364041
3314913YVW	3356200	3356200	331492WYWW pt	3341002 pt	3341002 pt	3315220521	3364051	3364051
3314915	33573	33573	3315111	33211	33211	3315220YWW	3364000	3364000
3314915100	3357300	3357300	3315111106	3321123	3321123	3315220YVW	3364002	3364002
3314917	33574 pt	33575 pt	3315111111	3321125	3321125	3315240	33650	33650
3314917400 pt	3357405	3357500 pt	3315111116	3321126	3321126	3315240101	3365011	3365011
3314917400 pt	3357400 pt	3357500 pt	3315111201	3321121	3321121	3315240206	3365031	3365031
3314919	33563	33563	3315111YVW	3321100	3321100	3315240311	3365051	3365051
3314919101	3356381	3356381	3315113	33212	33212	3315240416	3365073	3365073
3314919106	3356383	3356383	3315113101	3321222	3321222	3315240421	3365061	3365061
3314919111	3356386	3356386	3315113206	3321224	3321224	3315240YWW	3365000	3365000
3314919116	3356391	3356391	3315113211	3321231	3321231	3315240YVW	3365002	3365002
3314919YVW	3356300	3356300	3315113216	3321233	3321233	3315250	33660	33660
331491C	33569	33569	3315113221	3321240	3321240	3315250101	3366020	3366020
331491C101	3356934	3356934	3315113YVW	3321200	3321200	3315250206	3366021	3366021
331491C106	3356951	3356951	3315115	33217	33217	3315250221	3366025	3366025
331491C111	3356957	3356957	331515101	3321731	3321731	3315250411	3366022	3366022
331491C121	3356994	3356994	331515106	3321733	3321733	3315250416	3366024	3366024
331491C126	3356996	3356996	331515111	3321735	3321735	3315250426	3366026	3366026
331491C131	3356997	3356997	331515116	3321736	3321736	3315250531	3366031	3366031
331491C216	3356993	3356993	3315151YVW	3321700	3321700	3315250536	3366041	3366041
331491CYVW	3356900	3356900	3315117	33218	33218	3315250541	3366051	3366051
331491E	33576	33576	3315117101	3321822	3321822	3315250546	3366061	3366061
331491E100	3357600	3357600	3315117106	3321824	3321824	3315250651	3366072	3366072
331491G	33577	33577	3315117111	3321827	3321827	3315250YWW	3366000	3366000
331491G100	3357700	3357700	3315117116	3321830	3321830	3315250YVW	3366002	3366002
331491W pt	33560	33560	3315117121	3321833	3321833	3315280	33690	33690
331491W pt	33570 pt	33570 pt	3315117126	3321836	3321836	3315280116	3369085	3369085
331491WYWW pt	3356000	3356000	3315117YVW	3321800	3321800	3315280201	3369011	3369011
331491WYWW pt	3357000 pt	3357000 pt	3315119	33219	33219	3315280206	3369015	3369015
331491WYWW pt	3356002	3356002	3315119101	3321931	3321931	3315280211	3369023	3369023
331491WYWW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099 pt
331491WYWW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099 pt
			3315119206	3321939	3321939	3315280YWW	3369000	3369000
			3315119YVW	3321900	3321900	3315280YVW	3369002	3369002



# Steel Foundries (Except Investment)

# 1997

Issued August 1999

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## 1997 Economic Census

*Manufacturing*

Industry Series



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# Steel Foundries (Except Investment)

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331513</b>	<b>Steel foundries (except investment)</b> .....	<b>265</b>	<b>288</b>	<b>23 982</b>	<b>762 835</b>	<b>19 789</b>	<b>40 523</b>	<b>563 394</b>	<b>1 793 449</b>	<b>1 174 552</b>	<b>2 957 240</b>	<b>127 476</b>
332500	Steel foundries, n.e.c. ....	N	288	23 982	762 835	19 789	40 523	563 394	1 793 449	1 174 552	2 957 240	127 476

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331513, STEEL FOUNDRIES (EXCEPT INVESTMENT)</b>												
<b>United States</b> .....	-	<b>288</b>	<b>162</b>	<b>23 982</b>	<b>762 835</b>	<b>19 789</b>	<b>40 523</b>	<b>563 394</b>	<b>1 793 449</b>	<b>1 174 552</b>	<b>2 957 240</b>	<b>127 476</b>
Alabama .....	-	14	8	1 322	46 068	1 106	2 316	36 791	107 201	76 386	184 293	8 076
California .....	-	24	11	969	31 918	822	1 654	25 181	68 316	46 425	113 778	4 897
Indiana .....	-	6	5	1 352	46 140	1 113	2 380	32 366	85 729	55 121	140 274	9 083
Louisiana .....	-	7	3	294	8 482	237	492	6 079	18 210	11 969	30 095	2 575
Michigan .....	-	27	14	1 354	38 462	1 118	2 153	26 328	84 170	51 383	136 738	15 434
Ohio .....	-	26	11	1 958	70 372	1 611	3 275	54 136	161 802	94 624	256 715	5 394
Oregon .....	-	7	6	1 144	41 990	977	1 883	29 554	133 991	108 712	245 554	7 169
Pennsylvania .....	-	29	18	2 336	64 109	1 951	3 826	47 840	136 254	94 737	227 182	7 599
Texas .....	-	18	14	2 369	68 438	1 988	4 276	49 662	138 279	88 949	223 146	10 460
Wisconsin .....	-	18	15	3 002	99 892	2 312	4 552	64 831	232 688	125 716	359 999	20 972

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331513, STEEL FOUNDRIES (EXCEPT INVESTMENT)</b>		<b>331513, STEEL FOUNDRIES (EXCEPT INVESTMENT)—Con.</b>	
Companies <sup>1</sup> .....	number.. 265	Value added .....	\$1,000.. 1 793 449
All establishments .....	number.. 288	Total inventories, beginning of year .....	\$1,000.. 345 729
Establishments with 1 to 19 employees .....	number.. 126	Finished goods inventories, beginning of year .....	\$1,000.. 116 484
Establishments with 20 to 99 employees .....	number.. 96	Work-in-process inventories, beginning of year .....	\$1,000.. 112 795
Establishments with 100 employees or more .....	number.. 66	Materials and supplies inventories, beginning of year .....	\$1,000.. 116 450
All employees .....	number.. 23 982	Total inventories, end of year .....	\$1,000.. 350 403
Total compensation <sup>2</sup> .....	\$1,000.. 963 377	Finished goods inventories, end of year .....	\$1,000.. 122 617
Annual payroll .....	\$1,000.. 762 835	Work-in-process inventories, end of year .....	\$1,000.. 117 423
Total fringe benefits .....	\$1,000.. 200 542	Materials and supplies inventories, end of year .....	\$1,000.. 110 363
Production workers, average for year .....	number.. 19 789	Gross book value of total assets at beginning of year .....	\$1,000.. 1 515 016
Production workers on March 15 .....	number.. 19 537	Total capital expenditures (new and used) .....	\$1,000.. 127 476
Production workers on May 15 .....	number.. 19 738	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 22 852
Production workers on August 15 .....	number.. 19 830	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 104 624
Production workers on November 15 .....	number.. 20 051	Total retirements <sup>2</sup> .....	\$1,000.. 25 415
Production-worker hours .....	1,000.. 40 523	Gross book value of total assets at end of year .....	\$1,000.. 1 617 077
Production-worker wages .....	\$1,000.. 563 394	Total depreciation during year <sup>2</sup> .....	\$1,000.. 85 072
Total cost of materials .....	\$1,000.. 1 174 552	Total rental payments <sup>2</sup> .....	\$1,000.. 17 266
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 824 550	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 5 791
Cost of resales .....	\$1,000.. 138 183	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 11 475
Cost of fuels .....	\$1,000.. 39 750	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 3 313
Cost of purchased electricity .....	\$1,000.. 92 122	Response coverage ratio <sup>4</sup> .....	percent.. 88
Cost of contract work .....	\$1,000.. 79 947	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 16 589
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 1 981 163	Response coverage ratio <sup>4</sup> .....	percent.. 88
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 2 899
Total value of shipments .....	\$1,000.. 2 957 240	Response coverage ratio <sup>4</sup> .....	percent.. 88
Primary products value of shipments .....	\$1,000.. 2 592 208	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 4 165
Secondary products value of shipments .....	\$1,000.. 189 675	Response coverage ratio <sup>4</sup> .....	percent.. 88
Total miscellaneous receipts .....	\$1,000.. 175 357	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 1 369
Value of resales .....	\$1,000.. 159 015	Response coverage ratio <sup>4</sup> .....	percent.. 88
Contract receipts .....	\$1,000.. 11 120	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 18 341
Other miscellaneous receipts .....	\$1,000.. 5 222	Response coverage ratio <sup>4</sup> .....	percent.. 88
Primary products specialization ratio .....	percent.. 93	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 2 049
Value of primary products shipments made in all industries .....	\$1,000.. 2 749 953	Response coverage ratio <sup>4</sup> .....	percent.. 88
Value of primary products shipments made in this industry .....	\$1,000.. 2 592 208	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 7 525
Value of primary products shipments made in other industries .....	\$1,000.. 157 745	Response coverage ratio <sup>4</sup> .....	percent.. 88
Coverage ratio .....	percent.. 94		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331513, STEEL FOUNDRIES (EXCEPT INVESTMENT)</b>												
<b>All establishments .....</b>	-	<b>288</b>	<b>162</b>	<b>23 982</b>	<b>762 835</b>	<b>19 789</b>	<b>40 523</b>	<b>563 394</b>	<b>1 793 449</b>	<b>1 174 552</b>	<b>2 957 240</b>	<b>127 476</b>
Establishments with 1 to 4 employees .....	9	52	-	100	2 629	88	133	1 927	5 723	4 273	9 984	409
Establishments with 5 to 9 employees .....	7	32	-	217	6 804	183	323	4 944	14 933	11 293	26 326	2 018
Establishments with 10 to 19 employees .....	5	42	-	570	15 875	452	778	10 845	40 166	27 165	66 874	4 508
Establishments with 20 to 49 employees .....	1	67	67	2 163	59 680	1 761	3 304	42 375	130 669	88 414	217 847	7 562
Establishments with 50 to 99 employees .....	-	29	29	2 030	63 024	1 638	3 369	43 632	120 947	84 389	203 888	7 159
Establishments with 100 to 249 employees .....	-	40	40	6 953	227 126	5 558	11 660	164 244	588 501	367 571	948 006	37 706
Establishments with 250 to 499 employees .....	-	17	17	6 077	185 075	5 142	10 829	144 567	446 978	318 316	765 956	35 972
Establishments with 500 to 999 employees .....	-	9	9	5 872	202 622	4 967	10 127	150 860	445 532	273 131	718 359	32 142
Establishments with 1,000 to 2,499 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	96	-	675	16 859	568	859	12 324	36 297	24 648	60 863	2 454

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331513</b>	<b>Steel foundries (except investment) .....</b>	<b>288</b>	<b>23 982</b>	<b>762 835</b>	<b>19 789</b>	<b>40 523</b>	<b>563 394</b>	<b>1 793 449</b>	<b>1 174 552</b>	<b>2 957 240</b>	<b>127 476</b>
3315131	Other carbon steel castings, except investment .....	74	10 142	319 574	8 658	17 573	252 918	728 142	427 621	1 157 063	46 485
3315133	High alloy steel castings, except investment .....	63	6 285	218 450	4 822	10 068	145 192	512 981	337 937	847 257	43 747
3315135	Other alloy steel castings, except investment .....	53	6 837	206 713	5 709	11 950	152 169	508 702	379 813	880 865	33 736

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331513</b>	<b>Steel foundries, nec</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>2 749 953</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>2 011 383</b>
3315131	Other carbon steel castings, except investment .....	N	X	X	1 155 369	N	X	X	879 844
33151311	Cast carbon steel railroad car wheels and railway specialties .....	N	X	X	406 213	N	X	X	N
3315131101	Cast carbon steel railroad car wheels and railway specialties .....	11	X	X	406 213	16	X	X	372 342
33151312	All other carbon steel castings, except investment .....	N	X	X	749 156	N	X	X	N
3315131206	Carbon steel rolls for rolling mills .....	4	X	X	7 060	4	X	X	D
3315131211	Other carbon steel castings, except investment .....	118	X	X	742 096	95	X	X	486 117
3315131Y	Other carbon steel castings, except investment, nsk .....	N	X	X	-	N	X	X	N
3315131YVV	Other carbon steel castings, except investment, nsk .....	N	X	X	-	N	X	X	D
3315133	High alloy steel castings, except investment .....	N	X	X	739 715	N	X	X	432 207
33151331	High alloy steel castings, except investment .....	N	X	X	739 715	N	X	X	N
3315133101	High manganese alloy steel castings, except investment .....	22	X	S	162 765	19	X	P47.0	101 499
3315133106	Other high alloy steel castings, except investment .....	96	X	X	576 950	77	X	X	330 708
3315133Y	High alloy steel castings, except investment, nsk .....	N	X	X	-	N	X	X	N
3315133YVV	High alloy steel castings, except investment, nsk .....	N	X	X	-	N	X	X	-
3315135	Other alloy steel castings, except investment .....	N	X	X	744 391	N	X	X	487 359
33151351	Other alloy steel castings, except investment .....	N	X	X	744 391	N	X	X	N
3315135101	Other alloy steel railway specialties castings, except investment .....	6	X	D	D	3	X	P0.5	1 186
3315135106	Other alloy steel rolls for rolling mills, except investment .....	6	X	D	D	8	X	S	81 419
3315135111	All other alloy steel castings, except investment .....	79	X	Q206.3	586 754	67	X	P202.0	403 328
3315135Y	Other alloy steel castings, except investment, nsk .....	N	X	X	-	N	X	X	N
3315135YVV	Other alloy steel castings, except investment, nsk .....	N	X	X	-	N	X	X	1 426
331513W	Steel foundries, nec, nsk, total .....	N	X	X	110 478	N	X	X	211 973
331513WY	Steel foundries, nec, nsk, total .....	N	X	X	110 478	N	X	X	N
331513WYVV	Steel foundries, n.e.c., nsk, for nonadministrative-record establishments .....	N	X	X	44 889	N	X	X	177 659
331513WYVY	Steel foundries, n.e.c., nsk, for administrative-record establishments .....	N	X	X	65 589	N	X	X	34 314

# Additional information is available for this item: see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3315131</b>	<b>OTHER CARBON STEEL CASTINGS, EXCEPT INVESTMENT</b>		
	<b>United States</b> .....	<b>1 155 369</b>	<b>879 844</b>
	Alabama .....	136 664	N
	California .....	21 016	8 463
	Indiana .....	28 679	N
	Iowa .....	91 838	N
	Louisiana .....	18 520	N
	Michigan .....	39 198	38 731
	Missouri .....	13 422	11 518
	Ohio .....	145 858	173 106
	Oregon .....	2 217	N
	Pennsylvania .....	99 499	79 185
	Texas .....	57 865	35 036
	Utah .....	6 177	N
	Washington .....	35 551	22 613
	Wisconsin .....	125 349	78 494
<b>3315133</b>	<b>HIGH ALLOY STEEL CASTINGS, EXCEPT INVESTMENT</b>		
	<b>United States</b> .....	<b>739 715</b>	<b>432 207</b>
	Alabama .....	37 585	24 814
	California .....	21 486	5 037
	Illinois .....	23 511	N
	Iowa .....	4 381	6 074
	Michigan .....	60 937	9 732
	Minnesota .....	10 687	N
	Ohio .....	73 633	58 627
	Oregon .....	57 803	N
	Pennsylvania .....	61 136	53 280
	Texas .....	37 900	25 145
	Washington .....	28 085	18 282
	Wisconsin .....	165 484	77 671
<b>3315135</b>	<b>OTHER ALLOY STEEL CASTINGS, EXCEPT INVESTMENT</b>		
	<b>United States</b> .....	<b>744 391</b>	<b>487 359</b>
	California .....	55 297	N
	Michigan .....	28 643	23 362
	Ohio .....	17 007	42 638
	Oregon .....	80 419	N
	Pennsylvania .....	45 020	70 565
	Texas .....	92 859	75 414
	Washington .....	18 442	15 360
	Wisconsin .....	46 177	41 547

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331513</b>	<b>STEEL FOUNDRIES (EXCEPT INVESTMENT)</b>				
33120045	Pig iron shapes and forms (except silvery iron, castings, forgings, and fabricated metal products) .....	X	3 344	X	2 413
33111205	Ferrochromium shapes and forms (except castings, forgings, and fabricated metal products) .....	X	27 455	X	23 647
33111203	Ferromanganese, silicomanganese, and manganese shapes and forms (except castings, forgings, and fabricated metal products) .....	X	14 031	X	11 287
33111207	Ferrosilicon (more than 8 percent silicon) shapes and forms (except castings, forgings, and fabricated metal products) .....	X	9 711	X	6 690
33100013	All other ferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	69 024	X	11 422
33141925	Nickel and nickel-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	44 344	X	28 712
33141947	Cobalt-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	4 095	X	1 281
33141905	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	20 555	X	10 095
00190023	Iron and steel scrap, excluding home scrap .....	X	107 724	X	104 387
00190082	All other purchased scrap, excluding home scrap .....	X	69 667	X	13 899
32712400	Clay refractories .....	X	10 160	X	9 460
32791001	Grinding wheels and other abrasive products, except industrial diamonds .....	X	21 562	X	12 363
32712500	Nonclay refractories .....	X	15 865	X	12 573
32700009	All other stone, clay, glass, and concrete products .....	X	4 539	X	4 703
33299700	Industrial patterns .....	X	15 432	X	11 647

See footnotes at end of table.

**Table 7. Materials Consumed by Kind: 1997 and 1992—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331513</b>	<b>STEEL FOUNDRIES (EXCEPT INVESTMENT)—Con.</b>				
33350003	Industrial dies, molds, jigs, and fixtures . . . . .	X	5 010	X	3 341
001900A5	All other industrial and commercial machinery and computer equipment . . . . .	X	6 029	X	5 121
21232005	Sand . . . . .	X	34 773	X	22 407
00970099	All other materials and components, parts, containers, and supplies . . . . .	X	297 857	X	243 481
00971000	Materials, ingredients, containers, and supplies, n.s.k. . . . .	X	43 373	X	63 329

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.



# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331513 STEEL FOUNDRIES (EXCEPT INVESTMENT)**

This U.S. industry comprises establishments primarily engaged in manufacturing steel castings (except steel investment castings). Establishments in this industry purchase steel made in other establishments.

The data published with NAICS code 331513 include the following SIC industry:

3325 Steel foundries, n.e.c.

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.



In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## **DESCRIPTION OF THE ASM ESTIMATING PROCEDURE**

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.



# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33111111	33121 pt	33121 pt	3312223	33152 pt	33152 pt	3313161	33541	33541
3311111101	331215	3312111 pt	3312223101	3315251	3315201 pt	3313161101	3354115	3354115
3311111103	3312116	3312112 pt	3312223103	3315252	3315203 pt	3313161206	3354118	3354118
3311111105	3312153	3312151 pt	3312223105	3315253	3315205 pt	3313161311	3354125	3354125
3311111107	3312173	3312171 pt	3312223107	3315254	3315207 pt	3313161416	3354128	3354128
3311111109 pt	3312196 pt	3312131 pt	3312223109	3315255	3315209 pt	3313161YVW	3354100	3354100
3311111109 pt	3312196 pt	3312197 pt	3312223111 pt	3315214 pt	3315210 pt	3313163	33542	33542
3311111111	3312191	3312191	3312223111 pt	3315214 pt	3315213 pt	3313163101	3354261	3354261
3311111113	3312192	3312192	3312223113	3315256	3315216 pt	3313163106	3354263	3354263
3311111115 pt	3312195 pt	3312193	3312223122	3315257	3315222 pt	3313163YVW	3354200	3354200
3311111115 pt	3312195 pt	3312194	3312223124	3315258	3315223 pt	331316W	33540	33540
3311111117	3312198	3312198	3312223126	3315259	3315225 pt	331316WYVW	3354000	3354000
3311111YVW	3312100 pt	3312100 pt	3312223128	3315260	3315230 pt	331316WYVW	3354002	3354002
3311112	33991 pt	33991 pt	3312223YVW	3315200 pt	3315200 pt	3313191	33551	33551
3311112100 pt	3399100 pt	3399100 pt	3312225	33155	33155	3313191100	3355100	3355100
3311112100 pt	3399155	3399155	3312225100	3315500	3315500	3313193	33552	33552
33111113	33122	33122	3312227	33156	33156	3313193100 pt	3355200 pt	3355200
3311113100	3312200	3312200	3312227101	3315613	3315613	3313193100 pt	3355200 pt	3355222
3311115	33123	33123	3312227110	3315621	3315621	3313193100 pt	3355200 pt	3355225
3311115100	3312300	3312300	3312227112 pt	3315640 pt	3315635	3313197	33571	33571
3311117	33124	33124	3312227112 pt	3315640 pt	3315671	3313197100	3357100	3357100
3311117100	3312400	3312400	3312227YVW	3315600	3315600	3313199	33553	33553
3311119	33125	33125	3312229	33157	33157	3313199100	3355300	3355300
3311119100	3312500	3312500	3312229100	3315700	3315700	331319A	33574 pt	33575 pt
331111B	33126	33126	331222B	33159	33159	331319A100 pt	3357401	3357500 pt
331111B100	3312600	3312600	331222B110	3315951	3315951	331319A100 pt	3357400 pt	3357500 pt
331111D	33127	33127	331222B120	3315955	3315955	331319C	33554	33554
331111D100	3312700	3312700	331222B122	3315963	3315963	331319C100	3355400	3355400
331111F	33128	33128	331222B124	3315971	3315971	331319W pt	33550	33550
331111F100	3312800	3312800	331222B126 pt	3315998 pt	3315942	331319W pt	33570 pt	33570 pt
331111H	3312A	3312A	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3355000	3355000
331111H101	3312A17	3312A17	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3357000 pt	3357000 pt
331111H203	3312A26	3312A26	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3355002	3355002
331111HYVW	3312A00	3312A00	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3357002 pt	3357002 pt
331111J	3312B	3312B	331222BYVW	3315900	3315900	3314110 pt	33310	33310
331111J101	3312B62	3312B62	331222W	33150	33150	3314110 pt	33311	33311
331111J203	3312B66	3312B66	331222WYVW	3315000 pt	3315000 pt	3314110 pt	33312	33312
331111JYVW	3312B00	3312B00	331222WYVW	3315002 pt	3315002 pt	3314110101	3331100	3331100
331111L	3312C	3312C	3313110 pt	28190 pt	28190 pt	3314110106	3331217	3331217
331111L100	3312C00	3312C00	3313110 pt	28195	28195	3314110111	3331230	3331230
331111W pt	33120 pt	33120 pt	3313110100	2819500	2819500	3314110YVW pt	3331000	3331000
331111W pt	33990 pt	33990 pt	3313110YVW	2819000 pt	2819000 pt	3314110YVW pt	3331200	3331200
331111WYVW pt	3312000 pt	3312000 pt	3313110YVW	2819002 pt	2819002 pt	3314110YVW pt	3331002	3331002
331111WYVW pt	3399000 pt	3399000 pt	3313121	33347	33347	3314191	33391	33391
331111WYVW pt	3312002 pt	3312002 pt	3313121100	3334700	3334700	3314191100	3339100	3339100
331111WYVW pt	3399002 pt	3399002 pt	3313123	33348	33348	3314193	33392	33392
3311121	33132	33132	3313123100	3334800	3334800	3314193101 pt	3339231 pt	3339234
3311121100	3313200	3313200	331312W	33340	33340	3314193101 pt	3339231 pt	3339244
3311123	33133	33133	331312WYVW	3334000	3334000	3314193101 pt	3339231 pt	3339255
3311123100	3313300	3313300	331312WYVW	3334002	3334002	3314193111	3339251	3339251
3311125	33134 pt	33134 pt	3313141	33417	33417	3314193YVW	3339200	3339200
3311125101	3313416	3313415 pt	3313141100	3341700	3341700	3314197	33395	33395
3311125203 pt	3313487 pt	3313408	3313143	33418	33418	3314197101	3339525	3339525
3311125203 pt	3313487 pt	3313489 pt	3313143100	3341800	3341800	3314197206	3339535	3339535
3311125305	3313497	3313498 pt	3313145	33991 pt	33991 pt	3314197311	3339545	3339545
3311125YVW	3313400 pt	3313400 pt	3313145100	3399111	3399111	3314197YVW	3339500	3339500
331112W	33130 pt	33130 pt	331314W pt	33410 pt	33410 pt	3314199	33398	33398
331112WYVW	3313000 pt	3313000 pt	331314W pt	33990 pt	33990 pt	3314199101	3339805	3339805
331112WYVW	3313002 pt	3313002 pt	331314WYVW pt	3341000 pt	3341000 pt	3314199103	3339833	3339833
3312100	33170	33170	331314WYVW pt	3399000 pt	3399000 pt	3314199106 pt	3339851 pt	3339843
3312100100	3317000 pt	3317000 pt	331314WYVW pt	3341002 pt	3341002 pt	3314199106 pt	3339851 pt	3339863
3312100YVW	3317000 pt	3317000 pt	331314WYVW pt	3399002 pt	3399002 pt	3314199121	3339873	3339873
3312100YVW	3317002	3317000 pt	3313151	33531	33531	3314199126 pt	3339889 pt	3339871
3312213	33168	33168	3313151101	3353113	3353113	3314199126 pt	3339889 pt	3339889
3312213100	3316800	3316800	3313151106	3353115	3353115	3314199131	3339899	3339899
331221W	33160	33160	3313151YVW	3353100	3353100	3314199YVW	3339800	3339800
331221WYVW	3316000	3316000	3313153	33532	33532	331419W	33390	33390
331221WYVW	3316002	3316002	3313153101	3353223	3353223	331419WYVW	3339000	3339000
3312221	33151	33151	3313153106	3353225	3353225	331419WYVW	3339002	3339002
3312221110	3315113	3315113	3313153211	3353227	3353227	3314211	33511	33511
3312221112	3315115	3315115	3313153216	3353231	3353231	3314211101	3351111	3351111
3312221214	3315125	3315125	3313153221	3353233	3353233	3314211206	3351131	3351131
3312221222	3315134	3315134	3313153YVW	3353200	3353200	3314211YVW	3351100	3351100
3312221YVW	3315100	3315100	3313155	33533	33533	3314213	33513	33513
3312221110	3315113	3315113	3313155100	3353300	3353300	3314213101	3351311	3351311
3312221112	3315115	3315115	331315W	335300 pt	335300 pt	3314213206	3351332	3351332
3312221214	3315125	3315125	331315WYVW	3353000 pt	3353000 pt	3314213YVW	3351300	3351300
3312221222	3315134	3315134	331315WYVW	3353002 pt	3353002 pt	3314217	33514	33514
3312221YVW	3315100	3315100	331315YVW	3353002 pt	3353002 pt	3314217101	3351413	3351413
						3314217206	3351435	3351435
						3314217YVW	3351400	3351400

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3314219	33515	33515	3314921	33991 pt	33991 pt	331511A	33221	33221
3314219101	3351516	3351516	3314921101	3399166	3399166	331511A100	3322100	3322100
3314219211	3351536	3351536	3314921206	3399177	3399177	331511C	33222	33222
3314219306	3351518	3351518	3314921311	3399186	3399186	331511C300	3322200	3322200
3314219316	3351538	3351538	3314921416 pt	3399189 pt	3399187	331511E	33216	33216
3314219YVW	3351500	3351500	3314921416 pt	3399189 pt	3399188	331511E200	3321600	3321600
331421W	33510	33510	3314921426	3399191	3399191	331511W pt	33210	33210
331421WYWW	3351000	3351000	3314921431	3399198	3399198	331511W pt	33220	33220
331421WYWW	3351002	3351002	3314921YVW	3399100 pt	3399100 pt	331511W pt	33220	33220
3314221	33572	33572	3314923	33413	33413	331511WYWW pt	3321000	3321000
3314221101	3357211	3357211	3314923101	3341311	3341311	331511WYWW pt	3322000	3322000
3314221106	3357251	3357251	3314923206	3341321	3341321	331511WYWW pt	3321002	3321002
3314221211	3357271	3357271	3314923211	3341333	3341333	331511WYWW pt	3322002	3322002
3314221216	3357281	3357281	3314923216	3341351	3341351	3315120	33240	33240
3314221YVW	3357200	3357200	3314923221	3341399	3341399	3315120101	3324063	3324063
3314223	33574 pt	33575 pt	3314923YVW	3341300	3341300	3315120106	3324064	3324064
3314223300 pt	3357402	3357500 pt	3314927	33414	33414	3315120216	3324067	3324067
3314223300 pt	3357400 pt	3357500 pt	3314927101 pt	3341431 pt	3341405	3315120311	3324066	3324066
331422W	33570 pt	33570 pt	3314927101 pt	3341431 pt	3341434	3315120YWW	3324000	3324000
331422WYWW	3357000 pt	3357000 pt	3314927101 pt	3341431 pt	3341444	3315120YWW	3324002	3324002
331422WYWW	3357002 pt	3357002 pt	3314927206	3341411	3341411	3315131	33252	33252
3314230 pt	33410 pt	33410 pt	3314927YVW	3341400	3341400	3315131101	3325211	3325211
3314230 pt	33412	33412	3314929	33415	33415	3315131206	3325215	3325215
3314230 pt	33990 pt	33990 pt	3314929101	3341525	3341525	3315131211	3325219	3325219
3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315131YVW	3325200	3325200
3314230101	3341224	3341224	3314929211	3341545	3341545	3315133	33254	33254
3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133101	3325421	3325421
3314230206	3341226	3341226	331492A pt	33134 pt	33134 pt	3315133106	3325431	3325431
3314230311	3341231	3341231	331492A pt	33416	33416	3315133YVW	3325400	3325400
3314230YVW pt	3341000 pt	3341000 pt	331492A101 pt	3313417	3313415 pt	3315135	33255	33255
3314230YVW pt	3341200	3341200	331492A101 pt	3341633	3341633	3315135101	3325551	3325551
3314230YVW pt	3399000 pt	3399000 pt	331492A106	3341635	3341635	3315135106	3325555	3325555
3314230YVW pt	3399100 pt	3399100 pt	331492A111	3341671	3341671	3315135111	3325559	3325559
3314230YVW pt	3341002 pt	3341002 pt	331492A116	3341697	3341697	3315135YVW	3325500	3325500
3314230YVW pt	3399002 pt	3399002 pt	331492A206	3313488	3313489 pt	331513W	33250	33250
3314911	33561	33561	331492A311	3313499	3313498 pt	331513WYWW	3325000	3325000
3314911101	3356161	3356161	331492AYVW pt	3313400 pt	3313400 pt	331513WYWW	3325002	3325002
3314911106	3356164	3356164	331492AYVW pt	3341600	3341600	3315210	33630	33630
3314911111	3356165	3356165	331492W pt	33130 pt	33130 pt	3315210000	3363000 pt	3363000 pt
3314911116	3356166	3356166	331492W pt	33410 pt	33410 pt	3315210YWW	3363000 pt	3363000 pt
3314911YVW	3356100	3356100	331492WYWW pt	33990 pt	33990 pt	3315220	33640	33640
3314913	33562	33562	331492WYWW pt	3313000 pt	3313000 pt	3315220101	3364011	3364011
3314913101	3356272	3356272	331492WYWW pt	3341000 pt	3341000 pt	3315220206	3364021	3364021
3314913106	3356274	3356274	331492WYWW pt	3399000 pt	3399000 pt	3315220311	3364031	3364031
3314913111	3356279	3356279	331492WYWW pt	3313002 pt	3313002 pt	3315220416	3364041	3364041
3314913YVW	3356200	3356200	331492WYWW pt	3341002 pt	3341002 pt	3315220521	3364051	3364051
3314915	33573	33573	3315111	33211	33211	3315220YWW	3364000	3364000
3314915100	3357300	3357300	3315111106	3321123	3321123	3315220YVW	3364002	3364002
3314917	33574 pt	33575 pt	3315111111	3321125	3321125	3315240	33650	33650
3314917400 pt	3357405	3357500 pt	3315111116	3321126	3321126	3315240101	3365011	3365011
3314917400 pt	3357400 pt	3357500 pt	3315111201	3321121	3321121	3315240206	3365031	3365031
3314919	33563	33563	3315111YVW	3321100	3321100	3315240311	3365051	3365051
3314919101	3356381	3356381	3315113	33212	33212	3315240416	3365073	3365073
3314919106	3356383	3356383	3315113101	3321222	3321222	3315240421	3365061	3365061
3314919111	3356386	3356386	3315113206	3321224	3321224	3315240YWW	3365000	3365000
3314919116	3356391	3356391	3315113211	3321231	3321231	3315240YVW	3365002	3365002
3314919YVW	3356300	3356300	3315113216	3321233	3321233	3315250	33660	33660
331491C	33569	33569	3315113221	3321240	3321240	3315250101	3366020	3366020
331491C101	3356934	3356934	3315113YVW	3321200	3321200	3315250206	3366021	3366021
331491C106	3356951	3356951	3315115	33217	33217	3315250221	3366025	3366025
331491C111	3356957	3356957	331515101	3321731	3321731	3315250411	3366022	3366022
331491C121	3356994	3356994	331515106	3321733	3321733	3315250416	3366024	3366024
331491C126	3356996	3356996	331515111	3321735	3321735	3315250426	3366026	3366026
331491C131	3356997	3356997	331515116	3321736	3321736	3315250531	3366031	3366031
331491C216	3356993	3356993	3315151YVW	3321700	3321700	3315250536	3366041	3366041
331491CYVW	3356900	3356900	3315117	33218	33218	3315250541	3366051	3366051
331491E	33576	33576	3315117101	3321822	3321822	3315250546	3366061	3366061
331491E100	3357600	3357600	3315117106	3321824	3321824	3315250651	3366072	3366072
331491G	33577	33577	3315117111	3321827	3321827	3315250YWW	3366000	3366000
331491G100	3357700	3357700	3315117116	3321830	3321830	3315250YVW	3366002	3366002
331491W pt	33560	33560	3315117121	3321833	3321833	3315280	33690	33690
331491W pt	33570 pt	33570 pt	3315117126	3321836	3321836	3315280116	3369085	3369085
331491WYWW pt	3356000	3356000	3315117YVW	3321800	3321800	3315280201	3369011	3369011
331491WYWW pt	3357000 pt	3357000 pt	3315119	33219	33219	3315280206	3369015	3369015
331491WYWW pt	3356002	3356002	3315119101	3321931	3321931	3315280211	3369023	3369023
331491WYWW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099 pt
331491WYWW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099 pt
331491WYWW pt	3357002 pt	3357002 pt	3315119206	3321939	3321939	3315280YWW	3369000	3369000
			3315119YVW	3321900	3321900	3315280YVW	3369002	3369002



# Aluminum Die-Casting Foundries

# 1997

Issued September 1999

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## 1997 Economic Census

*Manufacturing*

Industry Series



## U S C E N S U S B U R E A U

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U.S. CENSUS BUREAU



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The Economic Planning and Coordination Division, **Lawrence A. Blum**, Assistant Chief for Collection Activities and **Shirin A. Ahmed**, Assistant Chief for Post-Collection Processing, assisted by **Dennis Shoemaker**, Chief, Post-Collection Census Processing Branch, **Brandy Yarbrough**, Section Chief, **Sheila Proudfoot**, **Richard Williamson**, **Andrew W. Hait**, and **Jennifer E. Lins**, was responsible for developing the systems and procedures for data collection, editing, review, correction and dissemination

The staff of the National Processing Center, **Judith N. Petty**, Chief, performed mailout preparation and receipt operations, clerical and analytical review activities, data keying, and geocoding review.

The Geography Division staff developed geographic coding procedures and associated computer programs.

The Economic Statistical Methods and Programming Division, **Charles P. Pautler Jr.**, Chief, developed and coordinated the computer processing systems. **Martin S. Harahush**, Assistant Chief for Quinquennial Programs, assisted by **Barbara Lambert** and **Christina Arledge** were responsible for design and implementation of the computer systems. **Gary T. Sheridan**, Chief, Manufacturing and Construction Branch, **Lori A. Guido** and **Roy A. Smith**, Section Chiefs, supervised the preparation of the computer programs.

Computer Services Division, **Debra Williams**, Chief, performed the computer processing.

The staff of the Administrative and Customer Services Division, **Walter C. Odom**, Chief, performed planning, design, composition, editorial review, and printing planning and procurement for publications, Internet products, and report forms. **Cynthia G. Brooks** provided publication coordination and editing.

# Aluminum Die-Casting Foundries

1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.



# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331521</b>	<b>Aluminum die-casting foundries</b> .....	<b>290</b>	<b>317</b>	<b>27 487</b>	<b>897 228</b>	<b>22 702</b>	<b>47 489</b>	<b>672 272</b>	<b>1 922 869</b>	<b>1 842 127</b>	<b>3 765 687</b>	<b>231 197</b>
336300	Aluminum die-castings .....	N	317	27 487	897 228	22 702	47 489	672 272	1 922 869	1 842 127	3 765 687	231 197

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	All establishments			All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
	E <sup>1</sup>	Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331521, ALUMINUM DIE-CASTING FOUNDRIES</b>												
<b>United States</b> .....	<b>1</b>	<b>317</b>	<b>199</b>	<b>27 487</b>	<b>897 228</b>	<b>22 702</b>	<b>47 489</b>	<b>672 272</b>	<b>1 922 869</b>	<b>1 842 127</b>	<b>3 765 687</b>	<b>231 197</b>
Alabama .....	7	8	3	395	14 894	305	531	8 412	17 650	12 599	29 371	1 546
California .....	1	46	29	1 640	50 337	1 297	2 617	34 622	95 625	67 973	164 632	6 153
Florida .....	-	4	2	118	3 589	102	187	2 462	5 648	4 354	10 314	628
Georgia .....	-	6	4	516	16 680	440	953	13 352	35 713	35 998	72 230	5 005
Illinois .....	1	28	18	2 535	76 999	2 140	4 706	56 997	150 470	143 161	294 486	11 444
Indiana .....	-	16	13	2 824	123 771	2 467	5 117	99 245	185 718	337 036	524 564	45 005
Iowa .....	-	8	4	352	10 178	300	586	7 539	16 994	12 733	30 127	3 589
Kentucky .....	-	6	5	703	19 662	597	1 327	14 516	64 522	62 669	125 656	6 126
Massachusetts .....	-	7	2	605	16 966	478	1 137	11 610	60 296	18 345	77 550	3 921
Michigan .....	-	31	20	2 725	83 895	1 949	3 876	52 504	191 232	160 278	350 928	22 533
Minnesota .....	3	6	5	612	23 822	496	1 052	17 371	59 989	40 847	100 591	6 755
Missouri .....	-	11	7	1 119	26 276	977	1 919	21 529	51 019	48 731	101 791	5 904
New York .....	-	10	7	797	34 064	636	1 419	24 805	43 367	63 725	107 952	5 367
North Carolina .....	-	5	4	389	10 466	318	583	7 241	24 868	21 574	46 051	3 686
Ohio .....	1	32	21	2 971	100 403	2 541	5 078	78 057	244 053	232 110	474 437	34 526
Pennsylvania .....	-	12	8	1 741	58 134	1 495	3 138	46 538	122 936	105 529	227 610	11 366
Tennessee .....	-	7	4	884	25 543	740	1 561	19 849	65 676	40 888	105 666	9 269
Texas .....	1	12	7	850	21 240	731	1 642	15 695	42 152	32 225	73 812	4 322
Wisconsin .....	2	19	15	3 063	106 761	2 480	5 775	81 344	239 584	235 632	484 033	23 146

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331521, ALUMINUM DIE-CASTING FOUNDRIES</b>		<b>331521, ALUMINUM DIE-CASTING FOUNDRIES— Con.</b>	
Companies <sup>1</sup> .....	number.. 290	Value added .....	\$1,000.. 1 922 869
All establishments .....	number.. 317	Total inventories, beginning of year .....	\$1,000.. 311 394
Establishments with 1 to 19 employees .....	number.. 118	Finished goods inventories, beginning of year .....	\$1,000.. 95 618
Establishments with 20 to 99 employees .....	number.. 111	Work-in-process inventories, beginning of year .....	\$1,000.. 109 574
Establishments with 100 employees or more .....	number.. 88	Materials and supplies inventories, beginning of year .....	\$1,000.. 106 202
All employees .....	number.. 27 487	Total inventories, end of year .....	\$1,000.. 324 286
Total compensation <sup>2</sup> .....	\$1,000.. 1 139 490	Finished goods inventories, end of year .....	\$1,000.. 102 468
Annual payroll .....	\$1,000.. 897 228	Work-in-process inventories, end of year .....	\$1,000.. 102 033
Total fringe benefits .....	\$1,000.. 242 262	Materials and supplies inventories, end of year .....	\$1,000.. 119 785
Production workers, average for year .....	number.. 22 702	Gross book value of total assets at beginning of year .....	\$1,000.. 1 957 064
Production workers on March 12 .....	number.. 22 511	Total capital expenditures (new and used) .....	\$1,000.. 231 197
Production workers on May 12 .....	number.. 22 589	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 43 144
Production workers on August 12 .....	number.. 22 668	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 188 053
Production workers on November 12 .....	number.. 23 040	Total retirements <sup>2</sup> .....	\$1,000.. 39 632
Production-worker hours .....	\$1,000.. 47 489	Gross book value of total assets at end of year .....	\$1,000.. 2 148 629
Production-worker wages .....	\$1,000.. 672 272	Total depreciation during year <sup>2</sup> .....	\$1,000.. 133 472
Total cost of materials .....	\$1,000.. 1 842 127	Total rental payments <sup>2</sup> .....	\$1,000.. 33 475
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 1 547 709	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 13 469
Cost of resales .....	\$1,000.. 32 874	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 20 006
Cost of fuels .....	\$1,000.. 54 655	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 8 015
Cost of purchased electricity .....	\$1,000.. 70 167	Response coverage ratio <sup>4</sup> .....	percent.. 80
Cost of contract work .....	\$1,000.. 136 722	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 55 706
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 1 351 440	Response coverage ratio <sup>4</sup> .....	percent.. 80
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. D	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 3 416
Total value of shipments .....	\$1,000.. 3 765 687	Response coverage ratio <sup>4</sup> .....	percent.. 80
Primary products value of shipments .....	\$1,000.. 3 421 434	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 3 590
Secondary products value of shipments .....	\$1,000.. 230 946	Response coverage ratio <sup>4</sup> .....	percent.. 80
Total miscellaneous receipts .....	\$1,000.. 113 307	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 3 134
Value of resales .....	\$1,000.. 42 780	Response coverage ratio <sup>4</sup> .....	percent.. 80
Contract receipts .....	\$1,000.. D	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 1 896
Other miscellaneous receipts .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 80
Primary products specialization ratio .....	percent.. 93	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 1 632
Value of primary products shipments made in all industries .....	\$1,000.. 3 700 571	Response coverage ratio <sup>4</sup> .....	percent.. 80
Value of primary products shipments made in this industry .....	\$1,000.. 3 421 434	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 6 858
Value of primary products shipments made in other industries .....	\$1,000.. 279 137	Response coverage ratio <sup>4</sup> .....	percent.. 80
Coverage ratio .....	percent.. 92		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.



**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331521, ALUMINUM DIE-CASTING FOUNDRIES</b>												
<b>All establishments .....</b>	<b>1</b>	<b>317</b>	<b>199</b>	<b>27 487</b>	<b>897 228</b>	<b>22 702</b>	<b>47 489</b>	<b>672 272</b>	<b>1 922 869</b>	<b>1 842 127</b>	<b>3 765 687</b>	<b>231 197</b>
Establishments with 1 to 4 employees .....	9	35	-	78	2 237	70	136	1 833	5 255	5 216	10 468	602
Establishments with 5 to 9 employees .....	8	30	-	189	5 017	160	266	3 932	11 133	11 149	22 277	1 227
Establishments with 10 to 19 employees .....	7	53	-	758	22 346	628	1 183	16 056	48 598	41 611	90 140	4 648
Establishments with 20 to 49 employees .....	1	61	61	1 890	47 470	1 552	2 867	34 354	98 642	120 659	221 744	7 572
Establishments with 50 to 99 employees .....	1	50	50	3 734	114 416	3 033	6 425	79 601	217 758	185 139	399 290	23 732
Establishments with 100 to 249 employees .....	1	63	63	10 595	327 547	8 652	17 833	232 944	772 521	602 603	1 372 021	87 072
Establishments with 250 to 499 employees .....	-	21	21	7 267	235 765	6 082	12 576	185 713	575 426	500 484	1 080 685	81 498
Establishments with 500 to 999 employees .....	2	3	3	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	97	-	880	21 398	756	1 224	17 082	49 130	49 633	98 744	5 991

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331521</b>	<b>Aluminum die-casting foundries .....</b>	<b>317</b>	<b>27 487</b>	<b>897 228</b>	<b>22 702</b>	<b>47 489</b>	<b>672 272</b>	<b>1 922 869</b>	<b>1 842 127</b>	<b>3 765 687</b>	<b>231 197</b>

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331521</b>	<b>Aluminum die-castings</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>3 700 571</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>2 542 867</b>
3315210	Aluminum and aluminum-base alloy die-castings .....	N	X	X	3 700 571	N	X	X	2 542 867
33152100	Aluminum and aluminum-base alloy die-castings .....	N	X	X	3 599 919	N	X	X	N
3315210000	Aluminum and aluminum-base alloy die-castings .....mil lb..	248	X	¶ 419.5	3 599 919	N	X	N	N
3315210Y	Aluminum die-castings, nsk, total .....	N	X	X	100 652	N	X	X	N
3315210YWW	Aluminum die-castings, nsk, for nonadministrative-record establishments .....	N	X	X	5 136	N	X	X	N
3315210YWY	Aluminum die-castings, nsk, for administrative-record establishments .....	N	X	X	95 516	N	X	X	35 426

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; ¶ 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331521</b>	<b>ALUMINUM DIE-CASTING FOUNDRIES</b>				
33142111	Copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	37 191
33100039	Aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	601 703	X	486 714
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	22 208	X	32 335
33141935	Magnesium and magnesium-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	D
331000AG	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	1 525	X	D
00190024	Copper and copper-base alloy scrap (except home scrap) .....	X	245	X	D
00190040	Aluminum and aluminum-base alloy scrap (except home scrap) .....	X	196 477	X	134 041
00190080	Other nonferrous metal scrap (except home scrap) .....	X	D	X	D
33299700	Industrial patterns .....	X	745	X	1 964
33350003	Industrial dies, molds, jigs, and fixtures .....	X	48 690	X	25 977
001900A4	All other industrial and commercial machinery and computer equipment .....	X	4 567	X	4 526
21232005	Sand .....	X	1 948	X	651
32791001	Grinding wheels and other abrasive products, except industrial diamonds .....	X	2 522	X	1 410
00970099	All other materials and components, parts, containers, and supplies .....	X	236 220	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	139 545	X	96 762

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; ¶ 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.



## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331521 ALUMINUM DIE-CASTING FOUNDRIES**

This U.S. industry comprises establishments primarily engaged in introducing molten aluminum, under high pressure, into molds or dies to make aluminum die-castings. Establishments in this industry purchase aluminum made in other establishments.

The data published with NAICS code 331521 include the following SIC industry:

3363 Aluminum die-castings

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.



# Appendix E. Metropolitan Areas

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Not applicable for this report.

## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.



1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3314219	33515	33515	3314921	33991 pt	33991 pt	331511A	33221	33221
3314219101	3351516	3351516	3314921101	3399166	3399166	331511A100	3322100	3322100
3314219211	3351536	3351536	3314921206	3399177	3399177	331511C	33222	33222
3314219306	3351518	3351518	3314921311	3399186	3399186	331511C300	3322200	3322200
3314219316	3351538	3351538	3314921416 pt	3399189 pt	3399187	331511E	33216	33216
3314219YVW	3351500	3351500	3314921416 pt	3399189 pt	3399188	331511E200	3321600	3321600
331421W	33510	33510	3314921426	3399191	3399191	331511W pt	33210	33210
331421WYWW	3351000	3351000	3314921431	3399198	3399198	331511W pt	33210	33210
331421WYWW	3351002	3351002	3314921YVW	3399100 pt	3399100 pt	331511W pt	33220	33220
3314221	33572	33572	3314923	33413	33413	331511WYWW pt	3321000	3321000
3314221101	3357211	3357211	3314923101	3341311	3341311	331511WYWW pt	3322000	3322000
3314221106	3357251	3357251	3314923206	3341321	3341321	331511WYWW pt	3321002	3321002
3314221211	3357271	3357271	3314923211	3341333	3341333	331511WYWW pt	3322002	3322002
3314221216	3357281	3357281	3314923216	3341351	3341351	3315120	33240	33240
3314221YVW	3357200	3357200	3314923221	3341399	3341399	3315120101	3324063	3324063
3314223	33574 pt	33575 pt	3314923YVW	3341300	3341300	3315120106	3324064	3324064
3314223300 pt	3357402	3357500 pt	3314927	33414	33414	3315120216	3324067	3324067
3314223300 pt	3357400 pt	3357500 pt	3314927101 pt	3341431 pt	3341405	3315120311	3324066	3324066
331422W	33570 pt	33570 pt	3314927101 pt	3341431 pt	3341434	3315120YWW	3324000	3324000
331422WYWW	3357000 pt	3357000 pt	3314927101 pt	3341431 pt	3341444	3315120YWW	3324002	3324002
331422WYWW	3357002 pt	3357002 pt	3314927206	3341411	3341411	3315131	33252	33252
3314230 pt	33410 pt	33410 pt	3314927YVW	3341400	3341400	3315131101	3325211	3325211
3314230 pt	33412	33412	3314929	33415	33415	3315131206	3325215	3325215
3314230 pt	33990 pt	33990 pt	3314929101	3341525	3341525	3315131211	3325219	3325219
3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315131YVW	3325200	3325200
3314230101	3341224	3341224	3314929211	3341545	3341545	3315133	33254	33254
3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133101	3325421	3325421
3314230206	3341226	3341226	331492A pt	33134 pt	33134 pt	3315133106	3325431	3325431
3314230311	3341231	3341231	331492A pt	33416	33416	3315133YVW	3325400	3325400
3314230YVW pt	3341000 pt	3341000 pt	331492A101 pt	3313417	3313415 pt	3315135	33255	33255
3314230YVW pt	3341200	3341200	331492A101 pt	3341633	3341633	3315135101	3325551	3325551
3314230YVW pt	3399000 pt	3399000 pt	331492A106	3341635	3341635	3315135106	3325555	3325555
3314230YVW pt	3399100 pt	3399100 pt	331492A111	3341671	3341671	3315135111	3325559	3325559
3314230YVW pt	3341002 pt	3341002 pt	331492A116	3341697	3341697	3315135YVW	3325500	3325500
3314230YVW pt	3399002 pt	3399002 pt	331492A206	3313488	3313489 pt	331513W	33250	33250
3314911	33561	33561	331492A311	3313499	3313498 pt	331513WYWW	3325000	3325000
3314911101	3356161	3356161	331492AYVW pt	3313400 pt	3313400 pt	331513WYWW	3325002	3325002
3314911106	3356164	3356164	331492AYVW pt	3341600	3341600	3315210	33630	33630
3314911111	3356165	3356165	331492W pt	33130 pt	33130 pt	3315210000	3363000 pt	3363000 pt
3314911116	3356166	3356166	331492W pt	33410 pt	33410 pt	3315210YVW	3363000 pt	3363000 pt
3314911YVW	3356100	3356100	331492W pt	33990 pt	33990 pt	3315220	33640	33640
3314913	33562	33562	331492WYVW pt	3313000 pt	3313000 pt	3315220101	3364011	3364011
3314913101	3356272	3356272	331492WYVW pt	3341000 pt	3341000 pt	3315220206	3364021	3364021
3314913106	3356274	3356274	331492WYVW pt	3399000 pt	3399000 pt	3315220311	3364031	3364031
3314913111	3356279	3356279	331492WYVW pt	3313002 pt	3313002 pt	3315220416	3364041	3364041
3314913YVW	3356200	3356200	331492WYVW pt	3341002 pt	3341002 pt	3315220521	3364051	3364051
3314915	33573	33573	3315111	33211	33211	3315220YVW	3364000	3364000
3314915100	3357300	3357300	3315111106	3321123	3321123	3315220YVW	3364002	3364002
3314917	33574 pt	33575 pt	3315111111	3321125	3321125	3315240	33650	33650
3314917400 pt	3357405	3357500 pt	3315111116	3321126	3321126	3315240101	3365011	3365011
3314917400 pt	3357400 pt	3357500 pt	3315111201	3321121	3321121	3315240206	3365031	3365031
3314919	33563	33563	3315111YVW	3321100	3321100	3315240311	3365051	3365051
3314919101	3356381	3356381	3315113	33212	33212	3315240416	3365073	3365073
3314919106	3356383	3356383	3315113101	3321222	3321222	3315240421	3365061	3365061
3314919111	3356386	3356386	3315113206	3321224	3321224	3315240YVW	3365000	3365000
3314919116	3356391	3356391	3315113211	3321231	3321231	3315240YVW	3365002	3365002
3314919YVW	3356300	3356300	3315113216	3321233	3321233	3315250	33660	33660
331491C	33569	33569	3315113221	3321240	3321240	3315250101	3366020	3366020
331491C101	3356934	3356934	3315113YVW	3321200	3321200	3315250206	3366021	3366021
331491C106	3356951	3356951	3315115	33217	33217	3315250221	3366025	3366025
331491C111	3356957	3356957	331515101	3321731	3321731	3315250411	3366022	3366022
331491C121	3356994	3356994	331515106	3321733	3321733	3315250416	3366024	3366024
331491C126	3356996	3356996	331515111	3321735	3321735	3315250426	3366026	3366026
331491C131	3356997	3356997	331515116	3321736	3321736	3315250531	3366031	3366031
331491C216	3356993	3356993	3315151YVW	3321700	3321700	3315250536	3366041	3366041
331491CYVW	3356900	3356900	3315117	33218	33218	3315250541	3366051	3366051
331491E	33576	33576	3315117101	3321822	3321822	3315250546	3366061	3366061
331491E100	3357600	3357600	3315117106	3321824	3321824	3315250651	3366072	3366072
331491G	33577	33577	3315117111	3321827	3321827	3315250YVW	3366000	3366000
331491G100	3357700	3357700	3315117116	3321830	3321830	3315250YVW	3366002	3366002
331491W pt	33560	33560	3315117121	3321833	3321833	3315280	33690	33690
331491W pt	33570 pt	33570 pt	3315117126	3321836	3321836	3315280116	3369085	3369085
331491WYVW pt	3356000	3356000	3315117YVW	3321800	3321800	3315280201	3369011	3369011
331491WYVW pt	3357000 pt	3357000 pt	3315119	33219	33219	3315280206	3369015	3369015
331491WYVW pt	3356002	3356002	3315119101	3321931	3321931	3315280211	3369023	3369023
331491WYVW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099 pt
331491WYVW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099 pt
			3315119206	3321939	3321939	3315280YVW	3369000	3369000
			3315119YVW	3321900	3321900	3315280YVW	3369002	3369002



# Nonferrous (Except Aluminum) Die-Casting Foundries

1997

Issued September 1999

EC97M-3315E

## 1997 Economic Census

*Manufacturing*

Industry Series



U S C E N S U S B U R E A U

*Helping You Make Informed Decisions*

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## 1997 Economic Census

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Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for  
Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director





**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.



**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331522</b>	<b>Nonferrous (except aluminum) die-casting foundries</b> .....	<b>266</b>	<b>278</b>	<b>17 143</b>	<b>500 703</b>	<b>13 678</b>	<b>27 049</b>	<b>353 211</b>	<b>1 142 648</b>	<b>901 216</b>	<b>2 042 676</b>	<b>87 498</b>
336400	Nonferrous die-casting, except aluminum .....	N	278	17 143	500 703	13 678	27 049	353 211	1 142 648	901 216	2 042 676	87 498

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.  
<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331522, NONFERROUS (EXCEPT ALUMINUM) DIE-CASTING FOUNDRIES</b>												
<b>United States</b> .....	-	<b>278</b>	<b>154</b>	<b>17 143</b>	<b>500 703</b>	<b>13 678</b>	<b>27 049</b>	<b>353 211</b>	<b>1 142 648</b>	<b>901 216</b>	<b>2 042 676</b>	<b>87 498</b>
California .....	-	29	15	1 164	33 041	900	1 761	22 260	102 151	56 244	156 856	9 253
Connecticut .....	-	12	7	414	11 530	322	650	8 068	20 398	15 300	35 778	1 099
Illinois .....	-	22	17	2 259	70 420	1 823	3 828	48 687	161 407	121 215	282 349	12 373
Indiana .....	-	7	4	381	9 200	337	681	7 316	30 325	20 114	50 249	293
Michigan .....	-	34	26	3 051	94 073	2 294	4 713	62 069	233 480	260 748	497 672	17 031
New Jersey .....	-	11	6	346	9 252	269	506	5 614	21 825	12 426	34 019	881
New York .....	-	22	12	967	33 791	761	1 758	23 381	64 179	43 538	107 623	8 320
North Carolina .....	8	6	3	112	2 179	88	132	1 674	4 287	2 349	6 558	370
Ohio .....	-	20	14	1 221	35 417	970	2 002	24 407	77 359	78 351	155 012	5 484
Oregon .....	-	6	3	802	23 793	677	1 259	17 666	59 083	46 614	100 878	4 516
Pennsylvania .....	-	13	7	1 181	37 362	806	1 540	21 823	64 342	25 879	89 506	4 199
Rhode Island .....	1	11	2	193	5 730	157	318	3 628	11 934	10 562	22 102	359
Wisconsin .....	-	10	5	208	6 114	169	335	4 192	17 173	11 847	28 746	760

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331522, NONFERROUS (EXCEPT ALUMINUM) DIE-CASTING FOUNDRIES</b>		<b>331522, NONFERROUS (EXCEPT ALUMINUM) DIE-CASTING FOUNDRIES—Con.</b>	
Companies <sup>1</sup> .....	number.. 266	Value added .....	\$1,000.. 1 142 648
All establishments .....	number.. 278	Total inventories, beginning of year .....	\$1,000.. 194 769
Establishments with 1 to 19 employees .....	number.. 124	Finished goods inventories, beginning of year .....	\$1,000.. 63 403
Establishments with 20 to 99 employees .....	number.. 102	Work-in-process inventories, beginning of year .....	\$1,000.. 65 756
Establishments with 100 employees or more .....	number.. 52	Materials and supplies inventories, beginning of year .....	\$1,000.. 65 610
All employees .....	number.. 17 143	Total inventories, end of year .....	\$1,000.. 196 156
Total compensation <sup>2</sup> .....	\$1,000.. 617 547	Finished goods inventories, end of year .....	\$1,000.. 61 772
Annual payroll .....	\$1,000.. 500 703	Work-in-process inventories, end of year .....	\$1,000.. 68 575
Total fringe benefits .....	\$1,000.. 116 844	Materials and supplies inventories, end of year .....	\$1,000.. 65 809
Production workers, average for year .....	number.. 13 678	Gross book value of total assets at beginning of year .....	\$1,000.. 727 685
Production workers on March 12 .....	number.. 13 472	Total capital expenditures (new and used) .....	\$1,000.. 87 498
Production workers on May 12 .....	number.. 13 445	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 11 484
Production workers on August 12 .....	number.. 13 702	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 76 014
Production workers on November 12 .....	number.. 14 093	Total retirements <sup>2</sup> .....	\$1,000.. 18 550
Production-worker hours .....	1,000.. 27 049	Gross book value of total assets at end of year .....	\$1,000.. 796 633
Production-worker wages .....	\$1,000.. 353 211	Total depreciation during year <sup>2</sup> .....	\$1,000.. 61 565
Total cost of materials .....	\$1,000.. 901 216	Total rental payments <sup>2</sup> .....	\$1,000.. 27 256
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 685 516	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 13 046
Cost of resales .....	\$1,000.. 36 857	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 14 210
Cost of fuels .....	\$1,000.. 16 665	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 3 504
Cost of purchased electricity .....	\$1,000.. 32 294	Response coverage ratio <sup>4</sup> .....	percent.. 71
Cost of contract work .....	\$1,000.. 129 884	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 31 591
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 512 545	Response coverage ratio <sup>4</sup> .....	percent.. 71
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 3 267
Total value of shipments .....	\$1,000.. 2 042 676	Response coverage ratio <sup>4</sup> .....	percent.. 71
Primary products value of shipments .....	\$1,000.. 1 632 650	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 2 696
Secondary products value of shipments .....	\$1,000.. 308 193	Response coverage ratio <sup>4</sup> .....	percent.. 71
Total miscellaneous receipts .....	\$1,000.. 101 833	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 5 824
Value of resales .....	\$1,000.. 59 910	Response coverage ratio <sup>4</sup> .....	percent.. 71
Contract receipts .....	\$1,000.. D	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 2 451
Other miscellaneous receipts .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 71
Primary products specialization ratio .....	percent.. 84	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 2 803
Value of primary products shipments made in all industries .....	\$1,000.. 1 836 458	Response coverage ratio <sup>4</sup> .....	percent.. 71
Value of primary products shipments made in this industry .....	\$1,000.. 1 632 650	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 5 726
Value of primary products shipments made in other industries .....	\$1,000.. 203 808	Response coverage ratio <sup>4</sup> .....	percent.. 71
Coverage ratio .....	percent.. 88		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331522, NONFERROUS (EXCEPT ALUMINUM) DIE-CASTING FOUNDRIES</b>												
<b>All establishments</b> .....	-	278	154	17 143	500 703	13 678	27 049	353 211	1 142 648	901 216	2 042 676	87 498
Establishments with 1 to 4 employees .....	7	55	-	99	2 408	86	158	1 792	5 235	3 882	9 028	416
Establishments with 5 to 9 employees .....	5	36	-	255	7 088	217	405	5 048	14 478	15 130	29 505	1 094
Establishments with 10 to 19 employees .....	1	33	-	460	12 937	353	674	8 045	26 624	21 739	48 250	2 493
Establishments with 20 to 49 employees .....	1	65	65	2 096	61 996	1 626	3 246	41 481	137 003	108 153	242 892	6 372
Establishments with 50 to 99 employees .....	-	37	37	2 622	70 372	2 170	4 215	48 516	172 655	117 384	289 008	7 601
Establishments with 100 to 249 employees .....	-	34	34	5 135	154 105	3 938	8 153	101 382	392 804	359 916	754 118	33 715
Establishments with 250 to 499 employees .....	-	16	16	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees .....	-	2	2	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	77	-	325	7 786	267	474	5 755	16 569	10 604	26 849	1 557

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331522</b>	<b>Nonferrous (except aluminum) die-casting foundries</b> .....	278	17 143	500 703	13 678	27 049	353 211	1 142 648	901 216	2 042 676	87 498

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331522</b>	<b>Nonferrous die-castings, except aluminum</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>1 836 458</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>1 089 706</b>
3315220	Nonferrous (except aluminum) die-castings	N	X	X	1 836 458	N	X	X	1 089 706
33152201	Copper and copper-base alloy die-castings (including bearings and bushings)	N	X	X	141 411	N	X	X	N
3315220101	Copper and copper-base alloy die-castings (including bearings and bushings) .mil lb.	37	X	<sup>P</sup> 36.7	141 411	19	X	S	79 719
33152202	Zinc and zinc-base alloy die-castings	N	X	X	910 501	N	X	X	N
3315220206	Zinc and zinc-base alloy die-castings .mil lb.	172	X	<sup>Q</sup> 364.0	910 501	159	X	<sup>Q</sup> 253.8	685 768
33152203	Magnesium and magnesium-base alloy die-castings	N	X	X	326 413	N	X	X	N
3315220311	Magnesium and magnesium-base alloy die-castings .mil lb.	18	X	<sup>P</sup> 64.0	326 413	13	X	20.8	103 632
33152204	Lead and lead-base alloy die-castings	N	X	X	71 702	N	X	X	N
3315220416	Lead and lead-base alloy die-castings .mil lb.	11	X	<sup>Q</sup> 41.0	71 702	15	X	50.0	51 117
33152205	Other nonferrous metal die-castings, except aluminum	N	X	X	253 388	N	X	X	N
3315220521	Other nonferrous metal die-castings, except aluminum .mil lb.	28	X	S	253 388	15	X	S	29 255
3315220Y	Nonferrous (except aluminum) die-castings, nsk, total	N	X	X	133 043	N	X	X	N
3315220YWW	Nonferrous (except aluminum) die-castings, nsk, for nonadministrative-record establishments	N	X	X	104 665	N	X	X	112 761
3315220YWY	Nonferrous (except aluminum) die-castings, nsk, for administrative-record establishments	N	X	X	28 378	N	X	X	27 454

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: <sup>P</sup> 10 to 19 percent estimated; <sup>Q</sup> 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331522</b>	<b>NONFERROUS (EXCEPT ALUMINUM) DIE-CASTING FOUNDRIES</b>				
33142111	Copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products)	X	26 603	X	25 268
33100039	Aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products)	X	61 735	X	13 290
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products)	X	155 641	X	103 983
33141935	Magnesium and magnesium-base alloy shapes and forms (except castings, forgings, and fabricated metal products)	X	135 713	X	24 840
331000AG	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products)	X	28 120	X	7 612
00190024	Copper and copper-base alloy scrap (except home scrap)	X	1 722	X	D
00190040	Aluminum and aluminum-base alloy scrap (except home scrap)	X	746	X	D
00190080	Other nonferrous metal scrap (except home scrap)	X	2 114	X	D
33299700	Industrial patterns	X	259	X	D
33350003	Industrial dies, molds, jigs, and fixtures	X	10 856	X	3 393
001900A4	All other industrial and commercial machinery and computer equipment	X	934	X	2 710
21232005	Sand	X	2 531	X	D
32791001	Grinding wheels and other abrasive products, except industrial diamonds	X	4 681	X	708
00970099	All other materials and components, parts, containers, and supplies	X	167 336	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	86 525	X	57 818

See footnotes at end of table.

**Table 7. Materials Consumed by Kind: 1997 and 1992—Con.**

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: <sup>p</sup> 10 to 19 percent estimated; <sup>q</sup> 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each



product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331522 NONFERROUS (EXCEPT ALUMINUM) DIE-CASTING FOUNDRIES**

This U.S. industry comprises establishments primarily engaged in introducing molten nonferrous metal (except aluminum), under high pressure, into molds to make nonferrous metal die-castings. Establishments in this industry purchase nonferrous metals made in other establishments.

The data published with NAICS code 331522 include the following SIC industry:

3364 Nonferrous die-casting, except aluminum

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference



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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.



1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3314219	33515	33515	3314921	33991 pt	33991 pt	331511A	33221	33221
3314219101	3351516	3351516	3314921101	3399166	3399166	331511A100	3322100	3322100
3314219211	3351536	3351536	3314921206	3399177	3399177	331511C	33222	33222
3314219306	3351518	3351518	3314921311	3399186	3399186	331511C300	3322200	3322200
3314219316	3351538	3351538	3314921416 pt	3399189 pt	3399187	331511E	33216	33216
3314219YVW	3351500	3351500	3314921416 pt	3399189 pt	3399188	331511E200	3321600	3321600
331421W	33510	33510	3314921426	3399191	3399191	331511W pt	33210	33210
331421WYWW	3351000	3351000	3314921431	3399198	3399198	331511W pt	33220	33220
331421WYWW	3351002	3351002	3314921YVW	3399100 pt	3399100 pt	331511W pt	33220	33220
3314221	33572	33572	3314923	33413	33413	331511WYWW pt	3321000	3321000
3314221101	3357211	3357211	3314923101	3341311	3341311	331511WYWW pt	3322000	3322000
3314221106	3357251	3357251	3314923206	3341321	3341321	331511WYWW pt	3321002	3321002
3314221211	3357271	3357271	3314923211	3341333	3341333	331511WYWW pt	3322002	3322002
3314221216	3357281	3357281	3314923216	3341351	3341351	3315120	33240	33240
3314221YVW	3357200	3357200	3314923221	3341399	3341399	3315120101	3324063	3324063
3314223	33574 pt	33575 pt	3314923YVW	3341300	3341300	3315120106	3324064	3324064
3314223300 pt	3357402	3357500 pt	3314927	33414	33414	3315120216	3324067	3324067
3314223300 pt	3357400 pt	3357500 pt	3314927101 pt	3341431 pt	3341405	3315120311	3324066	3324066
331422W	33570 pt	33570 pt	3314927101 pt	3341431 pt	3341434	3315120YWW	3324000	3324000
331422WYWW	3357000 pt	3357000 pt	3314927101 pt	3341431 pt	3341444	3315120YWW	3324002	3324002
331422WYWW	3357002 pt	3357002 pt	3314927206	3341411	3341411	3315131	33252	33252
3314230 pt	33410 pt	33410 pt	3314927YVW	3341400	3341400	3315131101	3325211	3325211
3314230 pt	33412	33412	3314929	33415	33415	3315131206	3325215	3325215
3314230 pt	33990 pt	33990 pt	3314929101	3341525	3341525	3315131211	3325219	3325219
3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315131YVW	3325200	3325200
3314230101	3341224	3341224	3314929211	3341545	3341545	3315133	33254	33254
3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133101	3325421	3325421
3314230206	3341226	3341226	331492A pt	33134 pt	33134 pt	3315133106	3325431	3325431
3314230311	3341231	3341231	331492A pt	33416	33416	3315133YVW	3325400	3325400
3314230YVW pt	3341000 pt	3341000 pt	331492A101 pt	3313417	3313415 pt	3315135	33255	33255
3314230YVW pt	3341200	3341200	331492A101 pt	3341633	3341633	3315135101	3325551	3325551
3314230YVW pt	3399000 pt	3399000 pt	331492A106	3341635	3341635	3315135106	3325555	3325555
3314230YVW pt	3399100 pt	3399100 pt	331492A111	3341671	3341671	3315135111	3325559	3325559
3314230YVW pt	3341002 pt	3341002 pt	331492A116	3341697	3341697	3315135YVW	3325500	3325500
3314230YVW pt	3399002 pt	3399002 pt	331492A206	3313488	3313489 pt	331513W	33250	33250
3314911	33561	33561	331492A311	3313499	3313498 pt	331513WYWW	3325000	3325000
3314911101	3356161	3356161	331492AYVW pt	3313400 pt	3313400 pt	331513WYWW	3325002	3325002
3314911106	3356164	3356164	331492AYVW pt	3341600	3341600	3315210	33630	33630
3314911111	3356165	3356165	331492W pt	33130 pt	33130 pt	3315210000	3363000 pt	3363000 pt
3314911116	3356166	3356166	331492W pt	33410 pt	33410 pt	3315210YWW	3363000 pt	3363000 pt
3314911YVW	3356100	3356100	331492WYWW pt	33990 pt	33990 pt	3315220	33640	33640
3314913	33562	33562	331492WYWW pt	3313000 pt	3313000 pt	3315220101	3364011	3364011
3314913101	3356272	3356272	331492WYWW pt	3341000 pt	3341000 pt	3315220206	3364021	3364021
3314913106	3356274	3356274	331492WYWW pt	3399000 pt	3399000 pt	3315220311	3364031	3364031
3314913111	3356279	3356279	331492WYWW pt	3313002 pt	3313002 pt	3315220416	3364041	3364041
3314913YVW	3356200	3356200	331492WYWW pt	3341002 pt	3341002 pt	3315220521	3364051	3364051
3314915	33573	33573	3315111	33211	33211	3315220YWW	3364000	3364000
3314915100	3357300	3357300	3315111106	3321123	3321123	3315220YWW	3364002	3364002
3314917	33574 pt	33575 pt	3315111111	3321125	3321125	3315240	33650	33650
3314917400 pt	3357405	3357500 pt	3315111116	3321126	3321126	3315240101	3365011	3365011
3314917400 pt	3357400 pt	3357500 pt	3315111201	3321121	3321121	3315240206	3365031	3365031
3314919	33563	33563	3315111YVW	3321100	3321100	3315240311	3365051	3365051
3314919101	3356381	3356381	3315113	33212	33212	3315240416	3365073	3365073
3314919106	3356383	3356383	3315113101	3321222	3321222	3315240421	3365061	3365061
3314919111	3356386	3356386	3315113206	3321224	3321224	3315240YWW	3365000	3365000
3314919116	3356391	3356391	3315113211	3321231	3321231	3315240YVW	3365002	3365002
3314919YVW	3356300	3356300	3315113216	3321233	3321233	3315250	33660	33660
331491C	33569	33569	3315113221	3321240	3321240	3315250101	3366020	3366020
331491C101	3356934	3356934	3315113YVW	3321200	3321200	3315250206	3366021	3366021
331491C106	3356951	3356951	3315115	33217	33217	3315250221	3366025	3366025
331491C111	3356957	3356957	331515101	3321731	3321731	3315250411	3366022	3366022
331491C121	3356994	3356994	331515106	3321733	3321733	3315250416	3366024	3366024
331491C126	3356996	3356996	331515111	3321735	3321735	3315250426	3366026	3366026
331491C131	3356997	3356997	331515116	3321736	3321736	3315250531	3366031	3366031
331491C216	3356993	3356993	3315151YVW	3321700	3321700	3315250536	3366041	3366041
331491CYVW	3356900	3356900	3315117	33218	33218	3315250541	3366051	3366051
331491E	33576	33576	3315117101	3321822	3321822	3315250546	3366061	3366061
331491E100	3357600	3357600	3315117106	3321824	3321824	3315250651	3366072	3366072
331491G	33577	33577	3315117111	3321827	3321827	3315250YWW	3366000	3366000
331491G100	3357700	3357700	3315117116	3321830	3321830	3315250YVW	3366002	3366002
331491W pt	33560	33560	3315117121	3321833	3321833	3315280	33690	33690
331491W pt	33570 pt	33570 pt	3315117126	3321836	3321836	3315280116	3369085	3369085
331491WYWW pt	3356000	3356000	3315117YVW	3321800	3321800	3315280201	3369011	3369011
331491WYWW pt	3357000 pt	3357000 pt	3315119	33219	33219	3315280206	3369015	3369015
331491WYWW pt	3356002	3356002	3315119101	3321931	3321931	3315280211	3369023	3369023
331491WYWW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099 pt
331491WYWW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099 pt
331491WYWW pt	3357002 pt	3357002 pt	3315119206	3321939	3321939	3315280YWW	3369000	3369000
331491WYWW pt	3357002 pt	3357002 pt	3315119YVW	3321900	3321900	3315280YVW	3369002	3369002





# Aluminum Foundries (Except Die-Casting)

1997

Issued September 1999

EC97M-3315F

## 1997 Economic Census

*Manufacturing*

Industry Series



U S C E N S U S B U R E A U

*Helping You Make Informed Decisions*

U.S. Department of Commerce  
Economics and Statistics Administration  
U.S. CENSUS BUREAU



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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.



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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331524</b>	<b>Aluminum foundries (except die-casting)</b> .....	<b>593</b>	<b>625</b>	<b>34 094</b>	<b>1 013 777</b>	<b>27 829</b>	<b>58 295</b>	<b>722 253</b>	<b>2 209 694</b>	<b>1 743 769</b>	<b>3 937 183</b>	<b>262 083</b>
336500	Aluminum foundries .....	N	625	34 094	1 013 777	27 829	58 295	722 253	2 209 694	1 743 769	3 937 183	262 083

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)	
	E <sup>1</sup>	Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)					Wages (\$1,000)
<b>331524, ALUMINUM FOUNDRIES (EXCEPT DIE-CASTING)</b>												
<b>United States</b> .....	-	<b>625</b>	<b>276</b>	<b>34 094</b>	<b>1 013 777</b>	<b>27 829</b>	<b>58 295</b>	<b>722 253</b>	<b>2 209 694</b>	<b>1 743 769</b>	<b>3 937 183</b>	<b>262 083</b>
Alabama .....	-	12	5	993	22 933	814	1 516	13 090	17 979	107 252	122 928	9 129
California .....	1	81	36	2 676	77 657	2 202	4 585	51 008	160 787	89 906	250 331	6 963
Connecticut .....	-	7	4	162	5 442	128	262	3 609	9 418	4 338	13 919	838
Florida .....	1	19	4	288	6 269	227	434	4 680	15 934	4 715	20 526	487
Illinois .....	1	35	11	939	29 265	764	1 769	20 196	64 162	36 994	101 025	4 010
Indiana .....	-	29	16	2 667	84 975	2 205	4 764	64 441	199 743	243 996	442 900	13 072
Iowa .....	-	15	5	654	19 832	482	1 096	13 224	37 831	17 285	56 188	2 639
Kansas .....	7	8	3	168	3 041	139	179	2 262	5 829	4 548	10 410	677
Massachusetts .....	1	15	3	238	8 059	191	405	5 533	15 044	7 873	22 622	411
Michigan .....	-	36	22	1 872	63 418	1 495	3 079	44 301	141 400	118 528	260 683	21 543
Minnesota .....	-	17	10	2 223	76 225	1 666	3 790	48 753	133 919	91 690	226 967	12 123
New Hampshire .....	-	12	7	570	17 848	429	945	12 725	34 852	11 889	45 585	2 223
New Jersey .....	-	12	4	331	9 252	250	546	6 017	19 490	7 636	26 890	785
New York .....	1	26	10	869	23 984	700	1 442	17 063	40 083	22 158	61 720	6 511
Ohio .....	-	80	42	4 818	140 083	3 807	8 015	98 349	273 001	213 152	485 281	43 480
Oklahoma .....	1	9	2	229	4 077	151	290	2 740	7 166	3 772	10 890	221
Pennsylvania .....	-	45	22	1 741	50 516	1 455	3 009	37 641	94 798	65 470	161 046	6 341
Tennessee .....	-	14	7	1 853	48 890	1 660	3 307	40 983	151 623	120 270	271 229	8 200
Texas .....	-	25	14	958	23 493	709	1 435	16 265	40 432	39 755	80 272	2 968
Washington .....	-	12	7	1 095	30 212	926	1 848	20 421	75 274	42 054	117 391	6 875
Wisconsin .....	-	32	16	3 627	118 090	3 101	6 509	88 214	258 658	229 203	487 870	43 082

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331524, ALUMINUM FOUNDRIES (EXCEPT DIE-CASTING)</b>		<b>331524, ALUMINUM FOUNDRIES (EXCEPT DIE-CASTING)—Con.</b>	
Companies <sup>1</sup> .....	number.. 593	Value added .....	\$1,000.. 2 209 694
All establishments .....	number.. 625	Total inventories, beginning of year .....	\$1,000.. 274 607
Establishments with 1 to 19 employees .....	number.. 349	Finished goods inventories, beginning of year .....	\$1,000.. 65 834
Establishments with 20 to 99 employees .....	number.. 188	Work-in-process inventories, beginning of year .....	\$1,000.. 108 019
Establishments with 100 employees or more .....	number.. 88	Materials and supplies inventories, beginning of year .....	\$1,000.. 100 754
All employees .....	number.. 34 094	Total inventories, end of year .....	\$1,000.. 304 573
Total compensation <sup>2</sup> .....	\$1,000.. 1 281 808	Finished goods inventories, end of year .....	\$1,000.. 69 900
Annual payroll .....	\$1,000.. 1 013 777	Work-in-process inventories, end of year .....	\$1,000.. 120 233
Total fringe benefits .....	\$1,000.. 268 031	Materials and supplies inventories, end of year .....	\$1,000.. 114 440
Production workers, average for year .....	number.. 27 829	Gross book value of total assets at beginning of year .....	\$1,000.. 1 570 922
Production workers on March 12 .....	number.. 27 757	Total capital expenditures (new and used) .....	\$1,000.. 262 083
Production workers on May 12 .....	number.. 27 618	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 43 027
Production workers on August 12 .....	number.. 27 769	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 219 056
Production workers on November 12 .....	number.. 28 172	Total retirements <sup>2</sup> .....	\$1,000.. 37 486
Production-worker hours .....	1,000.. 58 295	Gross book value of total assets at end of year .....	\$1,000.. 1 795 519
Production-worker wages .....	\$1,000.. 722 253	Total depreciation during year <sup>2</sup> .....	\$1,000.. 139 516
Total cost of materials .....	\$1,000.. 1 743 769	Total rental payments <sup>2</sup> .....	\$1,000.. 35 439
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 1 428 489	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 15 696
Cost of resales .....	\$1,000.. 63 629	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 19 743
Cost of fuels .....	\$1,000.. 49 831	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 9 232
Cost of purchased electricity .....	\$1,000.. 70 609	Response coverage ratio <sup>4</sup> .....	percent.. 84
Cost of contract work .....	\$1,000.. 131 211	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 75 203
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 1 429 554	Response coverage ratio <sup>4</sup> .....	percent.. 84
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. 1 597	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 5 620
Total value of shipments .....	\$1,000.. 3 937 183	Response coverage ratio <sup>4</sup> .....	percent.. 84
Primary products value of shipments .....	\$1,000.. 3 444 415	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 8 121
Secondary products value of shipments .....	\$1,000.. 370 332	Response coverage ratio <sup>4</sup> .....	percent.. 84
Total miscellaneous receipts .....	\$1,000.. 122 436	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 2 715
Value of resales .....	\$1,000.. 94 972	Response coverage ratio <sup>4</sup> .....	percent.. 84
Contract receipts .....	\$1,000.. 7 872	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 3 335
Other miscellaneous receipts .....	\$1,000.. 19 592	Response coverage ratio <sup>4</sup> .....	percent.. 84
Primary products specialization ratio .....	percent.. 90	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 3 986
Value of primary products shipments made in all industries .....	\$1,000.. 3 603 647	Response coverage ratio <sup>4</sup> .....	percent.. 84
Value of primary products shipments made in this industry .....	\$1,000.. 3 444 415	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 11 026
Value of primary products shipments made in other industries .....	\$1,000.. 159 232	Response coverage ratio <sup>4</sup> .....	percent.. 84
Coverage ratio .....	percent.. 95		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331524. ALUMINUM FOUNDRIES (EXCEPT DIE-CASTING)</b>												
<b>All establishments</b> .....	-	<b>625</b>	<b>276</b>	<b>34 094</b>	<b>1 013 777</b>	<b>27 829</b>	<b>58 295</b>	<b>722 253</b>	<b>2 209 694</b>	<b>1 743 769</b>	<b>3 937 183</b>	<b>262 083</b>
Establishments with 1 to 4 employees .....	9	152	-	320	8 102	274	488	6 000	15 434	12 437	27 859	1 475
Establishments with 5 to 9 employees .....	7	87	-	596	16 171	469	870	11 445	30 278	21 506	51 820	2 368
Establishments with 10 to 19 employees .....	2	110	-	1 533	41 323	1 239	2 281	27 867	79 277	39 598	118 989	3 942
Establishments with 20 to 49 employees .....	-	121	121	3 779	108 952	3 093	6 092	74 883	226 923	118 068	344 410	17 235
Establishments with 50 to 99 employees .....	1	67	67	4 639	135 254	3 745	7 829	95 059	279 061	188 510	465 510	18 214
Establishments with 100 to 249 employees .....	-	58	58	9 731	289 450	7 605	15 866	200 312	589 675	464 800	1 053 793	68 578
Establishments with 250 to 499 employees .....	-	20	20	6 564	209 617	5 400	12 462	153 514	467 786	369 966	827 750	61 350
Establishments with 500 to 999 employees .....	-	9	9	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	220	-	964	22 374	790	1 293	16 265	41 624	33 943	75 595	4 031

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331524</b>	<b>Aluminum foundries (except die-casting) .....</b>	<b>625</b>	<b>34 094</b>	<b>1 013 777</b>	<b>27 829</b>	<b>58 295</b>	<b>722 253</b>	<b>2 209 694</b>	<b>1 743 769</b>	<b>3 937 183</b>	<b>262 083</b>

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331524</b>	<b>Aluminum foundries</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>3 603 647</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>1 875 300</b>
3315240	Aluminum and aluminum-base alloy castings, excluding die-castings .....	N	X	X	3 603 647	N	X	X	1 875 300
33152401	Aluminum and aluminum-base alloy sand castings (except cast aluminum cooking utensils) .....	N	X	X	1 362 644	N	X	X	N
3315240101	Aluminum and aluminum-base alloy sand castings (except cast aluminum cooking utensils) .....mil lb..	308	X	9313.6	1 362 644	332	X	S	874 107
33152402	Aluminum and aluminum-base alloy permanent and semipermanent mold castings (except cast aluminum cooking utensils) .....	N	X	X	1 669 293	N	X	X	N
3315240206	Aluminum and aluminum-base alloy permanent and semipermanent mold castings (except cast aluminum cooking utensils) .....mil lb..	126	X	614.7	1 669 293	112	X	P295.0	645 975
33152403	Aluminum and aluminum-base alloy investment castings (except cast aluminum cooking utensils) .....	N	X	X	145 300	N	X	X	N
3315240311	Aluminum and aluminum-base alloy investment castings (except cast aluminum cooking utensils) .....	44	X	X	145 300	35	X	X	102 678
33152404	Other aluminum and aluminum-base alloy castings .....	N	X	X	323 734	N	X	X	N
3315240416	Nonelectric cast aluminum pressure cookers (household-type) and nonelectric cast aluminum cooking utensils .....	5	X	X	16 785	9	X	X	37 377
3315240421	Other aluminum and aluminum-base alloy castings, excluding die-castings (except cast aluminum cooking utensils) .....	78	X	X	306 949	38	X	X	105 134
3315240Y	Aluminum foundries, nsk, total .....	N	X	X	102 676	N	X	X	N
3315240YWW	Aluminum foundries, nsk, for nonadministrative-record establishments .....	N	X	X	35 896	N	X	X	61 259
3315240YWY	Aluminum foundries, nsk, for administrative-record establishments .....	N	X	X	66 780	N	X	X	48 770

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331524</b>	<b>ALUMINUM FOUNDRIES (EXCEPT DIE-CASTING)</b>				
33142111	Copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	7 082	X	40 454
33100039	Aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	633 660	X	290 292
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	11 872	X	3 088
33141935	Magnesium and magnesium-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	19 134	X	4 064
331000AG	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	D
00190024	Copper and copper-base alloy scrap (except home scrap) .....	X	D	X	D
00190040	Aluminum and aluminum-base alloy scrap (except home scrap) .....	X	234 473	X	34 068
00190080	Other nonferrous metal scrap (except home scrap) .....	X	511	X	1 156
33299700	Industrial patterns .....	X	21 279	X	17 400
33350003	Industrial dies, molds, jigs, and fixtures .....	X	87 442	X	7 153
001900A4	All other industrial and commercial machinery and computer equipment .....	X	3 186	X	11 280
21232005	Sand .....	X	20 980	X	15 432
32791001	Grinding wheels and other abrasive products, except industrial diamonds .....	X	8 920	X	5 428
00970099	All other materials and components, parts, containers, and supplies .....	X	262 158	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	113 870	X	62 444

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.



# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331524 ALUMINUM FOUNDRIES (EXCEPT DIE-CASTING)**

This U.S. industry comprises establishments primarily engaged in pouring molten aluminum into molds to manufacture aluminum castings. Establishments in this industry purchase aluminum made in other establishments.

The data published with NAICS code 331524 include the following SIC industry:

3365 Aluminum foundries

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.



In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.





1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3314219	33515	33515	3314921	33991 pt	33991 pt	331511A	33221	33221
3314219101	3351516	3351516	3314921101	3399166	3399166	331511A100	3322100	3322100
3314219211	3351536	3351536	3314921206	3399177	3399177	331511C	33222	33222
3314219306	3351518	3351518	3314921311	3399186	3399186	331511C300	3322200	3322200
3314219316	3351538	3351538	3314921416 pt	3399189 pt	3399187	331511E	33216	33216
3314219YVW	3351500	3351500	3314921416 pt	3399189 pt	3399188	331511E200	3321600	3321600
331421W	33510	33510	3314921426	3399191	3399191	331511W pt	33210	33210
331421WYWW	3351000	3351000	3314921431	3399198	3399198	331511W pt	33210	33210
331421WYWW	3351002	3351002	3314921YVW	3399100 pt	3399100 pt	331511W pt	33220	33220
3314221	33572	33572	3314923	33413	33413	331511WYWW pt	3321000	3321000
3314221101	3357211	3357211	3314923101	3341311	3341311	331511WYWW pt	3322000	3322000
3314221106	3357251	3357251	3314923206	3341321	3341321	331511WYWW pt	3321002	3321002
3314221211	3357271	3357271	3314923211	3341333	3341333	331511WYWW pt	3322002	3322002
3314221216	3357281	3357281	3314923216	3341351	3341351	3315120	33240	33240
3314221YVW	3357200	3357200	3314923221	3341399	3341399	3315120101	3324063	3324063
3314223	33574 pt	33575 pt	3314923YVW	3341300	3341300	3315120106	3324064	3324064
3314223300 pt	3357402	3357500 pt	3314927	33414	33414	3315120216	3324067	3324067
3314223300 pt	3357400 pt	3357500 pt	3314927101 pt	3341431 pt	3341405	3315120311	3324066	3324066
331422W	33570 pt	33570 pt	3314927101 pt	3341431 pt	3341434	3315120YWW	3324000	3324000
331422WYWW	3357000 pt	3357000 pt	3314927101 pt	3341431 pt	3341444	3315120YWW	3324002	3324002
331422WYWW	3357002 pt	3357002 pt	3314927206	3341411	3341411	3315131	33252	33252
3314230 pt	33410 pt	33410 pt	3314927YVW	3341400	3341400	3315131101	3325211	3325211
3314230 pt	33412	33412	3314929	33415	33415	3315131206	3325215	3325215
3314230 pt	33990 pt	33990 pt	3314929101	3341525	3341525	3315131211	3325219	3325219
3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315131YVW	3325200	3325200
3314230101	3341224	3341224	3314929211	3341545	3341545	3315133	33254	33254
3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133101	3325421	3325421
3314230206	3341226	3341226	331492A pt	33134 pt	33134 pt	3315133106	3325431	3325431
3314230311	3341231	3341231	331492A pt	33416	33416	3315133YVW	3325400	3325400
3314230YVW pt	3341000 pt	3341000 pt	331492A101 pt	3313417	3313415 pt	3315135	33255	33255
3314230YVW pt	3341200	3341200	331492A101 pt	3341633	3341633	3315135101	3325551	3325551
3314230YVW pt	3399000 pt	3399000 pt	331492A106	3341635	3341635	3315135106	3325555	3325555
3314230YVW pt	3399100 pt	3399100 pt	331492A111	3341671	3341671	3315135111	3325559	3325559
3314230YVW pt	3341002 pt	3341002 pt	331492A116	3341697	3341697	3315135YVW	3325500	3325500
3314230YVW pt	3399002 pt	3399002 pt	331492A206	3313488	3313489 pt	331513W	33250	33250
3314911	33561	33561	331492A311	3313499	3313498 pt	331513WYWW	3325000	3325000
3314911101	3356161	3356161	331492AYVW pt	3313400 pt	3313400 pt	331513WYWW	3325002	3325002
3314911106	3356164	3356164	331492AYVW pt	3341600	3341600	3315210	33630	33630
3314911111	3356165	3356165	331492W pt	33130 pt	33130 pt	3315210000	3363000 pt	3363000 pt
3314911116	3356166	3356166	331492W pt	33410 pt	33410 pt	3315210YVW	3363000 pt	3363000 pt
3314911YVW	3356100	3356100	331492W pt	33990 pt	33990 pt	3315220	33640	33640
3314913	33562	33562	331492WYVW pt	3313000 pt	3313000 pt	3315220101	3364011	3364011
3314913101	3356272	3356272	331492WYVW pt	3341000 pt	3341000 pt	3315220206	3364021	3364021
3314913106	3356274	3356274	331492WYVW pt	3399000 pt	3399000 pt	3315220311	3364031	3364031
3314913111	3356279	3356279	331492WYVW pt	3313002 pt	3313002 pt	3315220416	3364041	3364041
3314913YVW	3356200	3356200	331492WYVW pt	3341002 pt	3341002 pt	3315220521	3364051	3364051
3314915	33573	33573	3315111	33211	33211	3315220YVW	3364000	3364000
3314915100	3357300	3357300	3315111106	3321123	3321123	3315220YVW	3364002	3364002
3314917	33574 pt	33575 pt	3315111111	3321125	3321125	3315240	33650	33650
3314917400 pt	3357405	3357500 pt	3315111116	3321126	3321126	3315240101	3365011	3365011
3314917400 pt	3357400 pt	3357500 pt	3315111201	3321121	3321121	3315240206	3365031	3365031
3314919	33563	33563	3315111YVW	3321100	3321100	3315240311	3365051	3365051
3314919101	3356381	3356381	3315113	33212	33212	3315240416	3365073	3365073
3314919106	3356383	3356383	3315113101	3321222	3321222	3315240421	3365061	3365061
3314919111	3356386	3356386	3315113206	3321224	3321224	3315240YVW	3365000	3365000
3314919116	3356391	3356391	3315113211	3321231	3321231	3315240YVW	3365002	3365002
3314919YVW	3356300	3356300	3315113216	3321233	3321233	3315250	33660	33660
331491C	33569	33569	3315113221	3321240	3321240	3315250101	3366020	3366020
331491C101	3356934	3356934	3315113YVW	3321200	3321200	3315250206	3366021	3366021
331491C106	3356951	3356951	3315115	33217	33217	3315250221	3366025	3366025
331491C111	3356957	3356957	331515101	3321731	3321731	3315250411	3366022	3366022
331491C121	3356994	3356994	331515106	3321733	3321733	3315250416	3366024	3366024
331491C126	3356996	3356996	331515111	3321735	3321735	3315250426	3366026	3366026
331491C131	3356997	3356997	331515116	3321736	3321736	3315250531	3366031	3366031
331491C216	3356993	3356993	3315151YVW	3321700	3321700	3315250536	3366041	3366041
331491CYVW	3356900	3356900	3315117	33218	33218	3315250541	3366051	3366051
331491E	33576	33576	3315117101	3321822	3321822	3315250546	3366061	3366061
331491E100	3357600	3357600	3315117106	3321824	3321824	3315250651	3366072	3366072
331491G	33577	33577	3315117111	3321827	3321827	3315250YVW	3366000	3366000
331491G100	3357700	3357700	3315117116	3321830	3321830	3315250YVW	3366002	3366002
331491W pt	33560	33560	3315117121	3321833	3321833	3315280	33690	33690
331491W pt	33570 pt	33570 pt	3315117126	3321836	3321836	3315280116	3369085	3369085
331491WYVW pt	3356000	3356000	3315117YVW	3321800	3321800	3315280201	3369011	3369011
331491WYVW pt	3357000 pt	3357000 pt	3315119	33219	33219	3315280206	3369015	3369015
331491WYVW pt	3356002	3356002	3315119101	3321931	3321931	3315280211	3369023	3369023
331491WYVW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099 pt
331491WYVW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099 pt
			3315119206	3321939	3321939	3315280YVW	3369000	3369000
			3315119YVW	3321900	3321900			



# Copper Foundries (Except Die-Casting)

1997

Issued September 1999

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## 1997 Economic Census

*Manufacturing*

Industry Series



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The Economic Planning and Coordination Division, **Lawrence A. Blum**, Assistant Chief for Collection Activities and **Shirin A. Ahmed**, Assistant Chief for Post-Collection Processing, assisted by **Dennis Shoemaker**, Chief, Post-Collection Census Processing Branch, **Brandy Yarbrough**, Section Chief, **Sheila Proudfoot**, **Richard Williamson**, **Andrew W. Hait**, and **Jennifer E. Lins**, was responsible for developing the systems and procedures for data collection, editing, review, correction and dissemination

The staff of the National Processing Center, **Judith N. Petty**, Chief, performed mailout preparation and receipt operations, clerical and analytical review activities, data keying, and geocoding review.

The Geography Division staff developed geographic coding procedures and associated computer programs.

The Economic Statistical Methods and Programming Division, **Charles P. Pautler Jr.**, Chief, developed and coordinated the computer processing systems. **Martin S. Harahush**, Assistant Chief for Quinquennial Programs, assisted by **Barbara Lambert** and **Christina Arledge** were responsible for design and implementation of the computer systems. **Gary T. Sheridan**, Chief, Manufacturing and Construction Branch, **Lori A. Guido** and **Roy A. Smith**, Section Chiefs, supervised the preparation of the computer programs.

Computer Services Division, **Debra Williams**, Chief, performed the computer processing.

The staff of the Administrative and Customer Services Division, **Walter C. Odom**, Chief, performed planning, design, composition, editorial review, and printing planning and procurement for publications, Internet products, and report forms. **Cynthia G. Brooks** provided publication coordination and editing.

# Copper Foundries (Except Die-Casting)

# 1997

Issued September 1999

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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331525</b>	<b>Copper foundries (except die-casting)</b> .....	<b>302</b>	<b>312</b>	<b>8 909</b>	<b>260 340</b>	<b>7 423</b>	<b>15 073</b>	<b>192 023</b>	<b>522 435</b>	<b>341 658</b>	<b>854 704</b>	<b>25 624</b>
336600	Copper foundries.....	N	312	8 909	260 340	7 423	15 073	192 023	522 435	341 658	854 704	25 624

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331525, COPPER FOUNDRIES (EXCEPT DIE-CASTING)</b>												
<b>United States</b> .....	<b>1</b>	<b>312</b>	<b>127</b>	<b>8 909</b>	<b>260 340</b>	<b>7 423</b>	<b>15 073</b>	<b>192 023</b>	<b>522 435</b>	<b>341 658</b>	<b>854 704</b>	<b>25 624</b>
Arizona .....	-	8	3	166	4 263	135	275	2 990	6 446	4 631	10 951	250
California .....	-	31	9	566	15 600	470	945	10 412	32 098	20 299	52 040	909
Illinois .....	3	26	12	785	25 938	690	1 444	20 226	46 799	32 647	79 291	3 421
Indiana .....	-	10	8	508	15 793	443	777	12 491	26 795	21 164	47 885	795
New York .....	2	18	7	283	6 118	228	461	4 201	10 630	5 221	15 970	256
Oregon .....	3	11	5	228	5 784	202	382	4 581	13 533	4 537	16 702	201
Pennsylvania .....	-	25	13	875	27 151	698	1 445	18 903	62 517	29 396	92 802	3 367
Texas .....	1	18	5	247	5 755	213	420	4 593	10 910	11 007	21 146	86
Wisconsin.....	1	11	8	1 162	36 776	973	2 073	27 942	83 880	48 795	132 236	7 641

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331525, COPPER FOUNDRIES (EXCEPT DIE-CASTING)</b>		<b>331525, COPPER FOUNDRIES (EXCEPT DIE-CASTING)—Con.</b>	
Companies <sup>1</sup> .....	number.. 302	Value added .....	\$1,000.. 522 435
All establishments .....	number.. 312	Total inventories, beginning of year .....	\$1,000.. 78 873
Establishments with 1 to 19 employees .....	number.. 185	Finished goods inventories, beginning of year .....	\$1,000.. 22 166
Establishments with 20 to 99 employees .....	number.. 105	Work-in-process inventories, beginning of year .....	\$1,000.. 26 121
Establishments with 100 employees or more .....	number.. 22	Materials and supplies inventories, beginning of year .....	\$1,000.. 30 586
All employees .....	number.. 8 909	Total inventories, end of year .....	\$1,000.. 88 204
Total compensation <sup>2</sup> .....	\$1,000.. 340 801	Finished goods inventories, end of year .....	\$1,000.. 27 751
Annual payroll .....	\$1,000.. 260 340	Work-in-process inventories, end of year .....	\$1,000.. 29 925
Total fringe benefits .....	\$1,000.. 80 461	Materials and supplies inventories, end of year .....	\$1,000.. 30 528
Production workers, average for year .....	number.. 7 423	Gross book value of total assets at beginning of year .....	\$1,000.. 359 353
Production workers on March 12 .....	number.. 7 226	Total capital expenditures (new and used) .....	\$1,000.. 25 624
Production workers on May 12 .....	number.. 7 489	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 4 100
Production workers on August 12 .....	number.. 7 512	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 21 524
Production workers on November 12 .....	number.. 7 465	Total retirements <sup>2</sup> .....	\$1,000.. 8 384
Production-worker hours .....	1,000.. 15 073	Gross book value of total assets at end of year .....	\$1,000.. 376 593
Production-worker wages .....	\$1,000.. 192 023	Total depreciation during year <sup>2</sup> .....	\$1,000.. 24 706
Total cost of materials .....	\$1,000.. 341 658	Total rental payments <sup>2</sup> .....	\$1,000.. 9 149
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 274 931	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 3 924
Cost of resales .....	\$1,000.. 17 349	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 5 225
Cost of fuels .....	\$1,000.. 7 413	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 823
Cost of purchased electricity .....	\$1,000.. 21 787	Response coverage ratio <sup>4</sup> .....	percent.. 95
Cost of contract work .....	\$1,000.. 20 178	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 5 634
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 363 833	Response coverage ratio <sup>4</sup> .....	percent.. 95
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. -	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 1 186
Total value of shipments .....	\$1,000.. 854 704	Response coverage ratio <sup>4</sup> .....	percent.. 95
Primary products value of shipments .....	\$1,000.. 741 848	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 481
Secondary products value of shipments .....	\$1,000.. 75 923	Response coverage ratio <sup>4</sup> .....	percent.. 95
Total miscellaneous receipts .....	\$1,000.. 36 933	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 870
Value of resales .....	\$1,000.. 27 241	Response coverage ratio <sup>4</sup> .....	percent.. 95
Contract receipts .....	\$1,000.. 4 574	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 600
Other miscellaneous receipts .....	\$1,000.. 5 118	Response coverage ratio <sup>4</sup> .....	percent.. 95
Primary products specialization ratio .....	percent.. 90	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 341
Value of primary products shipments made in all industries .....	\$1,000.. 874 230	Response coverage ratio <sup>4</sup> .....	percent.. 95
Value of primary products shipments made in this industry .....	\$1,000.. 741 848	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 1 101
Value of primary products shipments made in other industries .....	\$1,000.. 132 382	Response coverage ratio <sup>4</sup> .....	percent.. 95
Coverage ratio .....	percent.. 84		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.



**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	All establishments			All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
	E <sup>1</sup>	Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331525, COPPER FOUNDRIES (EXCEPT DIE-CASTING)</b>												
<b>All establishments .....</b>	<b>1</b>	<b>312</b>	<b>127</b>	<b>8 909</b>	<b>260 340</b>	<b>7 423</b>	<b>15 073</b>	<b>192 023</b>	<b>522 435</b>	<b>341 658</b>	<b>854 704</b>	<b>25 624</b>
Establishments with 1 to 4 employees .....	8	66	—	141	2 991	127	219	2 391	4 594	2 302	6 912	119
Establishments with 5 to 9 employees .....	5	66	—	461	11 090	381	692	8 127	20 245	10 355	31 215	436
Establishments with 10 to 19 employees .....	1	53	—	749	19 583	605	1 237	14 179	35 787	22 000	57 838	1 546
Establishments with 20 to 49 employees .....	1	76	76	2 418	68 657	1 996	3 996	48 196	141 603	93 893	231 660	4 163
Establishments with 50 to 99 employees .....	2	29	29	1 881	58 204	1 594	3 282	43 393	114 159	67 024	176 898	5 399
Establishments with 100 to 249 employees .....	—	21	21	D	D	D	D	D	D	D	D	D
Establishments with 250 to 499 employees .....	—	1	1	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees .....	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 1,000 to 2,499 employees .....	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more .....	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records <sup>2</sup> .....	9	104	—	507	9 854	451	753	7 894	14 897	7 936	22 866	412

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331525</b>	<b>Copper foundries (except die-casting) .....</b>	<b>312</b>	<b>8 909</b>	<b>260 340</b>	<b>7 423</b>	<b>15 073</b>	<b>192 023</b>	<b>522 435</b>	<b>341 658</b>	<b>854 704</b>	<b>25 624</b>

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331525</b>	<b>Copper foundries .....</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>874 230</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>750 446</b>
3315250	Copper and copper-base alloy castings, excluding die-castings .....	N	X	X	874 230	N	X	X	750 446
33152501	Copper-base alloy sand castings (except bearings and bushings) .....	N	X	X	164 612	N	X	X	N
3315250101	Copper-base alloy sand castings (except bearings and bushings) .....	58	X	X	164 612	67	X	X	122 660
33152502	Leaded red and semi-red brass sand castings (except bearings and bushings) .....	N	X	X	194 330	N	X	X	N
3315250206	Leaded red and semi-red brass sand castings (except bearings and bushings) .....	87	X	X	88 245	105	X	X	100 047
3315250221	Engineered copper alloy sand castings, including manganese bronzes, silicon bronzes and brasses, aluminum bronzes, and copper nickels (except bearings and bushings) .....	89	X	X	106 085	101	X	X	92 510
33152504	Tin bronze, copper and high-copper alloy, and other copper alloy sand castings .....	N	X	X	218 846	N	X	X	N
3315250411	Tin bronze sand castings, including leaded and high-leaded (except bearings and bushings) .....	55	X	X	55 910	51	X	X	41 980
3315250416	Copper and high-copper alloy sand castings (except bearings and bushings) .....	28	X	X	85 244	34	X	X	52 268
3315250426	Other copper alloy sand castings, including yellow and leaded yellow brasses, nickel tin bronzes, nickel silvers, lead bronzes, and special alloys (except bearings and bushings) .....	33	X	X	77 692	46	X	X	52 270
33152505	Other copper and copper-base alloy castings, excluding die-castings .....	N	X	X	172 004	N	X	X	N
3315250531	Copper and copper-base alloy permanent and semipermanent mold castings (except bearings and bushings) .....	5	X	X	25 962	6	X	X	29 867
3315250536	Copper and copper-base alloy centrifugal castings (except bearings and bushings) .....	9	X	X	58 088	10	X	X	33 636
3315250541	Copper and copper-base alloy investment castings (except bearings and bushings) .....	35	X	X	32 557	40	X	X	23 279
3315250546	Other copper and copper-base alloy castings, excluding die-castings (except bearings and bushings) .....	15	X	X	55 397	11	X	X	27 830
33152506	Copper-base alloy bearings and bushings, nonmachined .....	N	X	X	32 840	N	X	X	N
3315250651	Copper-base alloy bearings and bushings, nonmachined .....	5	X	X	32 840	9	X	X	34 115
3315250Y	Copper foundries, nsk, total .....	N	X	X	91 598	N	X	X	N
3315250YWW	Copper foundries, nsk, for nonadministrative-record establishments .....	N	X	X	69 170	N	X	X	129 464
3315250YWY	Copper foundries, nsk, for administrative-record establishments .....	N	X	X	22 428	N	X	X	10 520

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331525</b>	<b>COPPER FOUNDRIES (EXCEPT DIE-CASTING)</b>				
33142111	Copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	109 539	X	92 233
33100039	Aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	10 818	X	8 809
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	779	X	224
33141935	Magnesium and magnesium-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	883	X	D
331000AG	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	561	X	3 520
00190024	Copper and copper-base alloy scrap (except home scrap) .....	X	19 257	X	28 537
00190040	Aluminum and aluminum-base alloy scrap (except home scrap) .....	X	176	X	124
00190080	Other nonferrous metal scrap (except home scrap) .....	X	209	X	701
33299700	Industrial patterns .....	X	2 882	X	1 979
33350003	Industrial dies, molds, jigs, and fixtures .....	X	757	X	4 383
001900A4	All other industrial and commercial machinery and computer equipment .....	X	1 772	X	559
21232005	Sand .....	X	4 628	X	2 890
32791001	Grinding wheels and other abrasive products, except industrial diamonds .....	X	2 796	X	1 935
00970099	All other materials and components, parts, containers, and supplies .....	X	57 698	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	62 176	X	81 698

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.



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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331525 COPPER FOUNDRIES (EXCEPT DIE-CASTING)**

This U.S. industry comprises establishments primarily engaged in pouring molten copper into molds to manufacture copper castings. Establishments in this industry purchase copper made in other establishments.

The data published with NAICS code 331525 include the following SIC industry:

3366 Copper foundries

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.



# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.

# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33111111	33121 pt	33121 pt	3312223	33152 pt	33152 pt	3313161	33541	33541
3311111101	331215	3312111 pt	3312223101	3315251	3315201 pt	3313161101	3354115	3354115
3311111103	3312116	3312112 pt	3312223103	3315252	3315203 pt	3313161206	3354118	3354118
3311111105	3312153	3312151 pt	3312223105	3315253	3315205 pt	3313161311	3354125	3354125
3311111107	3312173	3312171 pt	3312223107	3315254	3315207 pt	3313161416	3354128	3354128
3311111109 pt	3312196 pt	3312131 pt	3312223109	3315255	3315209 pt	3313161YVW	3354100	3354100
3311111109 pt	3312196 pt	3312197 pt	3312223111 pt	3315214 pt	3315210 pt	3313163	33542	33542
3311111111	3312191	3312191	3312223111 pt	3315214 pt	3315213 pt	3313163101	3354261	3354261
3311111113	3312192	3312192	3312223113	3315256	3315216 pt	3313163106	3354263	3354263
3311111115 pt	3312195 pt	3312193	3312223122	3315257	3315222 pt	3313163YVW	3354200	3354200
3311111115 pt	3312195 pt	3312194	3312223124	3315258	3315223 pt	331316W	33540	33540
3311111117	3312198	3312198	3312223126	3315259	3315225 pt	331316WYVW	3354000	3354000
3311111YVW	3312100 pt	3312100 pt	3312223128	3315260	3315230 pt	331316WYVW	3354002	3354002
3311112	33991 pt	33991 pt	3312223YVW	3315200 pt	3315200 pt	3313191	33551	33551
331112100 pt	3399100 pt	3399100 pt	3312225	33155	33155	3313191100	3355100	3355100
331112100 pt	3399155	3399155	3312225100	3315500	3315500	3313193	33552	33552
33111113	33122	33122	3312227	33156	33156	3313193100 pt	3355200 pt	3355200
3311113100	3312200	3312200	3312227101	3315613	3315613	3313193100 pt	3355200 pt	3355222
3311115	33123	33123	3312227110	3315621	3315621	3313193100 pt	3355200 pt	3355225
3311115100	3312300	3312300	3312227112 pt	3315640 pt	3315635	3313197	33571	33571
3311117	33124	33124	3312227112 pt	3315640 pt	3315671	3313197100	3357100	3357100
3311117100	3312400	3312400	3312227YVW	3315600	3315600	3313199	33553	33553
3311119	33125	33125	3312229	33157	33157	3313199100	3355300	3355300
3311119100	3312500	3312500	3312229100	3315700	3315700	331319A	33574 pt	33575 pt
331111B	33126	33126	331222B	33159	33159	331319A100 pt	3357401	3357500 pt
331111B100	3312600	3312600	331222B110	3315951	3315951	331319A100 pt	3357400 pt	3357500 pt
331111D	33127	33127	331222B120	3315955	3315955	331319C	33554	33554
331111D100	3312700	3312700	331222B122	3315963	3315963	331319C100	3355400	3355400
331111F	33128	33128	331222B124	3315971	3315971	331319W pt	33550	33550
331111F100	3312800	3312800	331222B126 pt	3315998 pt	3315942	331319W pt	33570 pt	33570 pt
331111H	3312A	3312A	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3355000	3355000
331111H101	3312A17	3312A17	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3357000 pt	3357000 pt
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331111J	3312B	3312B	331222BYVW	3315900	3315900	3314110 pt	33310	33310
331111J101	3312B62	3312B62	331222W	33150	33150	3314110 pt	33311	33311
331111J203	3312B66	3312B66	331222WYVW	3315000 pt	3315000 pt	3314110 pt	33312	33312
331111JYVW	3312B00	3312B00	331222WYVW	3315002 pt	3315002 pt	3314110101	3331100	3331100
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331111WYVW pt	3312002 pt	3312002 pt	3313123	33348	33348	3314191100	3339100	3339100
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3311125101	3313416	3313415 pt	3313143	33418	33418	3314197	33395	33395
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331221WYVW	3316002	3316002	3313153216	3353231	3353231	3314211	33511	33511
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			331315WYVW	3353002 pt	3353002 pt	3314213YVW	3351300	3351300

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3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315131YVW	3325200	3325200
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3314913111	3356279	3356279	331492WYWW pt	3313002 pt	3313002 pt	3315220416	3364041	3364041
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3314919111	3356386	3356386	3315113206	3321224	3321224	3315240YVW	3365000	3365000
3314919116	3356391	3356391	3315113211	3321231	3321231	3315240YVW	3365002	3365002
3314919YVW	3356300	3356300	3315113216	3321233	3321233	3315250	33660	33660
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331491C106	3356951	3356951	3315115	33217	33217	3315250221	3366025	3366025
331491C111	3356957	3356957	331515101	3321731	3321731	3315250411	3366022	3366022
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331491G100	3357700	3357700	3315117116	3321830	3321830	3315250YVW	3366002	3366002
331491W pt	33560	33560	3315117121	3321833	3321833	3315280	33690	33690
331491W pt	33570 pt	33570 pt	3315117126	3321836	3321836	3315280116	3369085	3369085
331491WYVW pt	3356000	3356000	3315117YVW	3321800	3321800	3315280201	3369011	3369011
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331491WYVW pt	3356002	3356002	3315119101	3321931	3321931	3315280211	3369023	3369023
331491WYVW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099 pt
331491WYVW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099 pt
			3315119206	3321939	3321939	3315280YVW	3369000	3369000
			3315119YVW	3321900	3321900	3315280YVW	3369002	3369002



# Other Nonferrous Foundries (Except Die-Casting)

## 1997

Issued October 1999

EC97M-3315H

### 1997 Economic Census

*Manufacturing*

Industry Series



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**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the



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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331528</b>	<b>Other nonferrous foundries (except die-casting) . . . . .</b>	<b>136</b>	<b>141</b>	<b>6 529</b>	<b>214 786</b>	<b>5 163</b>	<b>10 321</b>	<b>141 217</b>	<b>607 824</b>	<b>363 447</b>	<b>959 086</b>	<b>30 591</b>
336900	Nonferrous foundries, n.e.c. . . .	N	141	6 529	214 786	5 163	10 321	141 217	607 824	363 447	959 086	30 591

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331528, OTHER NONFERROUS FOUNDRIES (EXCEPT DIE-CASTING)</b>												
<b>United States . . . . .</b>	-	<b>141</b>	<b>45</b>	<b>6 529</b>	<b>214 786</b>	<b>5 163</b>	<b>10 321</b>	<b>141 217</b>	<b>607 824</b>	<b>363 447</b>	<b>959 086</b>	<b>30 591</b>
California . . . . .	-	8	2	174	5 013	150	313	3 575	3 336	9 310	15 398	361
Illinois . . . . .	5	11	6	298	10 309	216	460	5 833	23 427	15 733	38 455	794
Massachusetts . . . . .	8	5	2	114	3 170	86	154	2 045	6 859	3 365	10 229	225
New York . . . . .	-	9	1	118	3 656	97	176	1 867	5 944	17 751	23 582	55
Pennsylvania . . . . .	-	7	2	231	7 949	180	454	5 938	13 870	23 389	36 465	1 100
Rhode Island . . . . .	3	20	4	161	4 305	132	238	3 042	6 875	6 682	13 888	209

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>331528, OTHER NONFERROUS FOUNDRIES (EXCEPT DIE-CASTING)</b>		<b>331528, OTHER NONFERROUS FOUNDRIES (EXCEPT DIE-CASTING)—Con.</b>	
Companies <sup>1</sup> .....	number.. 136	Value added .....	\$1,000.. 607 824
All establishments .....	number.. 141	Total inventories, beginning of year .....	\$1,000.. 115 186
Establishments with 1 to 19 employees .....	number.. 96	Finished goods inventories, beginning of year .....	\$1,000.. 17 448
Establishments with 20 to 99 employees .....	number.. 35	Work-in-process inventories, beginning of year .....	\$1,000.. 62 198
Establishments with 100 employees or more .....	number.. 10	Materials and supplies inventories, beginning of year .....	\$1,000.. 35 540
All employees .....	number.. 6 529	Total inventories, end of year .....	\$1,000.. 131 643
Total compensation <sup>2</sup> .....	\$1,000.. 278 513	Finished goods inventories, end of year .....	\$1,000.. 27 045
Annual payroll .....	\$1,000.. 214 786	Work-in-process inventories, end of year .....	\$1,000.. 64 786
Total fringe benefits .....	\$1,000.. 63 727	Materials and supplies inventories, end of year .....	\$1,000.. 39 812
Production workers, average for year .....	number.. 5 163	Gross book value of total assets at beginning of year .....	\$1,000.. 244 858
Production workers on March 12 .....	number.. 5 029	Total capital expenditures (new and used) .....	\$1,000.. 30 591
Production workers on May 12 .....	number.. 5 122	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 3 322
Production workers on August 12 .....	number.. 5 214	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 27 269
Production workers on November 12 .....	number.. 5 287	Total retirements <sup>2</sup> .....	\$1,000.. 5 265
Production-worker hours .....	1,000.. 10 321	Gross book value of total assets at end of year .....	\$1,000.. 270 184
Production-worker wages .....	\$1,000.. 141 217	Total depreciation during year <sup>2</sup> .....	\$1,000.. 16 705
Total cost of materials .....	\$1,000.. 363 447	Total rental payments <sup>2</sup> .....	\$1,000.. 5 357
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 290 773	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 2 235
Cost of resales .....	\$1,000.. 18 471	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 3 122
Cost of fuels .....	\$1,000.. 7 134	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 2 176
Cost of purchased electricity .....	\$1,000.. 14 480	Response coverage ratio <sup>4</sup> .....	percent.. 91
Cost of contract work .....	\$1,000.. 32 589	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 11 480
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 274 186	Response coverage ratio <sup>4</sup> .....	percent.. 91
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 1 395
Total value of shipments .....	\$1,000.. 959 086	Response coverage ratio <sup>4</sup> .....	percent.. 91
Primary products value of shipments .....	\$1,000.. 894 822	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 830
Secondary products value of shipments .....	\$1,000.. 32 913	Response coverage ratio <sup>4</sup> .....	percent.. 91
Total miscellaneous receipts .....	\$1,000.. 31 351	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 521
Value of resales .....	\$1,000.. 21 476	Response coverage ratio <sup>4</sup> .....	percent.. 91
Contract receipts .....	\$1,000.. D	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 452
Other miscellaneous receipts .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 91
Primary products specialization ratio .....	percent.. 96	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 1 013
Value of primary products shipments made in all industries .....	\$1,000.. 1 002 511	Response coverage ratio <sup>4</sup> .....	percent.. 91
Value of primary products shipments made in this industry .....	\$1,000.. 894 822	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 1 445
Value of primary products shipments made in other industries .....	\$1,000.. 107 689	Response coverage ratio <sup>4</sup> .....	percent.. 91
Coverage ratio .....	percent.. 89		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331528. OTHER NONFERROUS FOUNDRIES (EXCEPT DIE-CASTING)</b>												
<b>All establishments</b> .....	-	141	45	6 529	214 786	5 163	10 321	141 217	607 824	363 447	959 086	30 591
Establishments with 1 to 4 employees .....	9	50	-	101	2 865	78	137	1 876	5 889	3 178	9 113	392
Establishments with 5 to 9 employees .....	5	28	-	175	5 373	128	234	3 404	10 004	10 741	20 825	481
Establishments with 10 to 19 employees .....	1	18	-	246	7 330	194	397	4 323	15 688	16 482	32 146	800
Establishments with 20 to 49 employees .....	1	23	23	754	23 395	576	1 146	14 096	43 620	41 644	84 923	5 165
Establishments with 50 to 99 employees .....	2	12	12	819	26 388	642	1 324	16 211	57 281	49 103	108 187	3 237
Establishments with 100 to 249 employees .....	-	6	6	D	D	D	D	D	D	D	D	D
Establishments with 250 to 499 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	2	2	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	65	-	268	7 211	202	341	4 653	14 900	8 016	22 965	531

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>331528</b>	<b>Other nonferrous foundries (except die-casting) .....</b>	141	6 529	214 786	5 163	10 321	141 217	607 824	363 447	959 086	30 591

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>331528</b>	<b>Nonferrous foundries, nec</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>1 002 511</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>468 672</b>
3315280	Other nonferrous foundries .....	N	X	X	1 002 511	N	X	X	468 672
33152801	Nickel and nickel-base alloy castings (excluding die-castings) .....	N	X	X	154 088	N	X	X	N
3315280116	Nickel and nickel-base alloy castings (excluding die-castings) .....	19	X	X	154 088	16	X	X	100 949
33152802	Other nonferrous metal castings, excluding die-castings .....	N	X	X	816 246	N	X	X	N
3315280201	Zinc and zinc-base alloy castings (excluding die-castings) .....	24	X	X	82 870	15	X	X	36 361
3315280206	Magnesium and magnesium-base alloy sand castings (excluding die-castings) .....	12	X	X	35 518	14	X	X	32 871
3315280211	Other magnesium and magnesium-base alloy castings, including permanent and semipermanent mold and cast anodes (excluding die-castings) .....	7	X	X	10 058	5	X	X	13 813
3315280221	Other nonferrous metal castings (excluding die-castings) .....	61	X	X	687 800	N	X	X	N
3315280Y	Other nonferrous foundries, nsk, total .....	N	X	X	32 177	N	X	X	N
3315280YWW	Nonferrous foundries, nsk, for nonadministrative-record establishments .....	N	X	X	13 751	N	X	X	D
3315280YWY	Other nonferrous foundries, nsk, for administrative-record establishments .....	N	X	X	18 426	N	X	X	17 944

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>331528</b>	<b>OTHER NONFERROUS FOUNDRIES (EXCEPT DIE-CASTING)</b>				
33142111	Copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	1 405	X	D
33100039	Aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	914	X	1 104
33149105	Zinc and zinc-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	10 879	X	4 250
33141935	Magnesium and magnesium-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	1 751	X	4 353
331000AG	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	75 777	X	31 944
001900A4	Copper and copper-base alloy scrap (except home scrap) .....	X	D	X	D
001900A0	Aluminum and aluminum-base alloy scrap (except home scrap) .....	X	D	X	N
00190080	Other nonferrous metal scrap (except home scrap) .....	X	D	X	D
33299700	Industrial patterns .....	X	D	X	D
33350003	Industrial dies, molds, jigs, and fixtures .....	X	D	X	D
001900A4	All other industrial and commercial machinery and computer equipment .....	X	D	X	D
21232005	Sand .....	X	2 997	X	4 150
32791001	Grinding wheels and other abrasive products, except industrial diamonds .....	X	4 675	X	2 003
00970099	All other materials and components, parts, containers, and supplies .....	X	160 175	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	16 777	X	12 692

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers’ records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each



product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **331528 OTHER NONFERROUS FOUNDRIES (EXCEPT DIE-CASTING)**

This U.S. industry comprises establishments primarily engaged in pouring molten nonferrous metals (except aluminum and copper) into molds to manufacture nonferrous castings (except aluminum die-castings, nonferrous (except aluminum) die-castings, aluminum castings, and

copper castings). Establishments in this industry purchase nonferrous metals, such as nickel, lead, and zinc, made in other establishments.

The data published with NAICS code 331528 include the following SIC industry:

3369 Nonferrous foundries, n.e.c.

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference



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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.

# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33111111	33121 pt	33121 pt	3312223	33152 pt	33152 pt	3313161	33541	33541
3311111101	331215	3312111 pt	3312223101	3315251	3315201 pt	3313161101	3354115	3354115
3311111103	3312116	3312112 pt	3312223103	3315252	3315203 pt	3313161206	3354118	3354118
3311111105	3312153	3312151 pt	3312223105	3315253	3315205 pt	3313161311	3354125	3354125
3311111107	3312173	3312171 pt	3312223107	3315254	3315207 pt	3313161416	3354128	3354128
3311111109 pt	3312196 pt	3312131 pt	3312223109	3315255	3315209 pt	3313161YVW	3354100	3354100
3311111109 pt	3312196 pt	3312197 pt	3312223111 pt	3315214 pt	3315210 pt	3313163	33542	33542
3311111111	3312191	3312191	3312223111 pt	3315214 pt	3315213 pt	3313163101	3354261	3354261
3311111113	3312192	3312192	3312223113	3315256	3315216 pt	3313163106	3354263	3354263
3311111115 pt	3312195 pt	3312193	3312223122	3315257	3315222 pt	3313163YVW	3354200	3354200
3311111115 pt	3312195 pt	3312194	3312223124	3315258	3315223 pt	331316W	33540	33540
3311111117	3312198	3312198	3312223126	3315259	3315225 pt	331316WYVW	3354000	3354000
3311111YVW	3312100 pt	3312100 pt	3312223128	3315260	3315230 pt	331316WYVW	3354002	3354002
3311112	33991 pt	33991 pt	3312223YVW	3315200 pt	3315200 pt	3313191	33551	33551
3311112100 pt	3399100 pt	3399100 pt	3312225	33155	33155	3313191100	3355100	3355100
3311112100 pt	3399155	3399155	3312225100	3315500	3315500	3313193	33552	33552
3311113	33122	33122	3312227	33156	33156	3313193100 pt	3355200 pt	3355200
3311113100	3312200	3312200	3312227101	3315613	3315613	3313193100 pt	3355200 pt	3355222
3311115	33123	33123	3312227110	3315621	3315621	3313193100 pt	3355200 pt	3355225
3311115100	3312300	3312300	3312227112 pt	3315640 pt	3315635	3313197	33571	33571
3311117	33124	33124	3312227112 pt	3315640 pt	3315671	3313197100	3357100	3357100
3311117100	3312400	3312400	3312227YVW	3315600	3315600	3313199	33553	33553
3311119	33125	33125	3312229	33157	33157	3313199100	3355300	3355300
3311119100	3312500	3312500	3312229100	3315700	3315700	331319A	33574 pt	33575 pt
331111B	33126	33126	331222B	33159	33159	331319A100 pt	3357401	3357500 pt
331111B100	3312600	3312600	331222B110	3315951	3315951	331319A100 pt	3357400 pt	3357500 pt
331111D	33127	33127	331222B120	3315955	3315955	331319C	33554	33554
331111D100	3312700	3312700	331222B122	3315963	3315963	331319C100	3355400	3355400
331111F	33128	33128	331222B124	3315971	3315971	331319W pt	33550	33550
331111F100	3312800	3312800	331222B126 pt	3315998 pt	3315942	331319W pt	33570 pt	33570 pt
331111H	3312A	3312A	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3355000	3355000
331111H101	3312A17	3312A17	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3357000 pt	3357000 pt
331111H203	3312A26	3312A26	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3355002	3355002
331111HYVW	3312A00	3312A00	331222B126 pt	3315998 pt	3315973	331319WYVW pt	3357002 pt	3357002 pt
331111J	3312B	3312B	331222BYVW	3315900	3315900	3314110 pt	33310	33310
331111J101	3312B62	3312B62	331222W	33150	33150	3314110 pt	33311	33311
331111J203	3312B66	3312B66	331222WYVW	3315000 pt	3315000 pt	3314110 pt	33312	33312
331111JYVW	3312B00	3312B00	331222WYVW	3315002 pt	3315002 pt	3314110101	3331100	3331100
331111L	3312C	3312C	3313110 pt	28190 pt	28190 pt	3314110106	3331217	3331217
331111L100	3312C00	3312C00	3313110 pt	28195	28195	3314110111	3331230	3331230
331111W pt	33120 pt	33120 pt	3313110100	2819500	2819500	3314110YVW pt	3331000	3331000
331111W pt	33990 pt	33990 pt	3313110YVW	2819000 pt	2819000 pt	3314110YVW pt	3331200	3331200
331111WYVW pt	3312000 pt	3312000 pt	3313110YVW	2819002 pt	2819002 pt	3314110YVW	3331002	3331002
331111WYVW pt	3399000 pt	3399000 pt	3313121	33347	33347	3314191	33391	33391
331111WYVW pt	3312002 pt	3312002 pt	3313121100	3334700	3334700	3314191100	3339100	3339100
331111WYVW pt	3399002 pt	3399002 pt	3313123	33348	33348	3314193	33392	33392
3311121	33132	33132	3313123100	3334800	3334800	3314193101 pt	3339231 pt	3339234
3311121100	3313200	3313200	331312W	33340	33340	3314193101 pt	3339231 pt	3339244
3311123	33133	33133	331312WYVW	3334000	3334000	3314193101 pt	3339231 pt	3339255
3311123100	3313300	3313300	331312WYVW	3334002	3334002	3314193111	3339251	3339251
3311125	33134 pt	33134 pt	3313141	33417	33417	3314193YVW	3339200	3339200
3311125101	3313416	3313415 pt	3313141100	3341700	3341700	3314197	33395	33395
3311125203 pt	3313487 pt	3313408	3313143	33418	33418	3314197101	3339525	3339525
3311125203 pt	3313487 pt	3313489 pt	3313143100	3341800	3341800	3314197206	3339535	3339535
3311125305	3313497	3313498 pt	3313145	33991 pt	33991 pt	3314197311	3339545	3339545
3311125YVW	3313400 pt	3313400 pt	3313145100	3399111	3399111	3314197YVW	3339500	3339500
331112W	33130 pt	33130 pt	331314W pt	33410 pt	33410 pt	3314199	33398	33398
331112WYVW	3313000 pt	3313000 pt	331314W pt	33990 pt	33990 pt	3314199101	3339805	3339805
331112WYVW	3313002 pt	3313002 pt	331314WYVW pt	3341000 pt	3341000 pt	3314199103	3339833	3339833
3312100	33170	33170	331314WYVW pt	3399000 pt	3399000 pt	3314199106 pt	3339851 pt	3339843
3312100100	3317000 pt	3317000 pt	331314WYVW pt	3341002 pt	3341002 pt	3314199106 pt	3339851 pt	3339863
3312100YVW	3317000 pt	3317000 pt	331314WYVW pt	3399002 pt	3399002 pt	3314199121	3339873	3339873
3312100YVW	3317002	3317000 pt	3313151	33531	33531	3314199126 pt	3339889 pt	3339887
3312213	33168	33168	3313151101	3353113	3353113	3314199126 pt	3339889 pt	3339889
3312213100	3316800	3316800	3313151106	3353115	3353115	3314199131	3339899	3339899
331221W	33160	33160	3313151YVW	3353100	3353100	3314199YVW	3339800	3339800
331221WYVW	3316000	3316000	3313153	33532	33532	331419W	33390	33390
331221WYVW	3316002	3316002	3313153101	3353223	3353223	331419WYVW	3339000	3339000
3312221	33151	33151	3313153106	3353225	3353225	331419WYVW	3339002	3339002
3312221110	3315113	3315113	3313153211	3353227	3353227	3314211	33511	33511
3312221112	3315115	3315115	3313153216	3353231	3353231	3314211101	3351111	3351111
3312221214	3315125	3315125	3313153221	3353233	3353233	3314211206	3351131	3351131
3312221222	3315134	3315134	3313153YVW	3353200	3353200	3314211YVW	3351100	3351100
3312221YVW	3315100	3315100	3313155	33533	33533	3314213	33513	33513
3312221110	3315113	3315113	3313155100	3353300	3353300	3314213101	3351311	3351311
3312221112	3315115	3315115	331315W	335300 pt	335300 pt	3314213206	3351332	3351332
3312221214	3315125	3315125	331315WYVW	3353000 pt	3353000 pt	3314213YVW	3351300	3351300
3312221222	3315134	3315134	331315WYVW	3353002 pt	3353002 pt	3314217	33514	33514
3312221YVW	3315100	3315100	331315YVW	3353002 pt	3353002 pt	3314217101	3351413	3351413
						3314217206	3351435	3351435
						3314217YVW	3351400	3351400

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3314219	33515	33515	3314921	33991 pt	33991 pt	331511A	33221	33221
3314219101	3351516	3351516	3314921101	3399166	3399166	331511A100	3322100	3322100
3314219211	3351536	3351536	3314921206	3399177	3399177	331511C	33222	33222
3314219306	3351518	3351518	3314921311	3399186	3399186	331511C300	3322200	3322200
3314219316	3351538	3351538	3314921416 pt	3399189 pt	3399187	331511E	33216	33216
3314219YVW	3351500	3351500	3314921416 pt	3399189 pt	3399188	331511E200	3321600	3321600
331421W	33510	33510	3314921426	3399191	3399191	331511W pt	33210	33210
331421WYWW	3351000	3351000	3314921431	3399198	3399198	331511W pt	33220	33220
331421WYWW	3351002	3351002	3314921YVW	3399100 pt	3399100 pt	331511W pt	33220	33220
3314221	33572	33572	3314923	33413	33413	331511WYWW pt	3321000	3321000
3314221101	3357211	3357211	3314923101	3341311	3341311	331511WYWW pt	3322000	3322000
3314221106	3357251	3357251	3314923206	3341321	3341321	331511WYWW pt	3321002	3321002
3314221211	3357271	3357271	3314923211	3341333	3341333	331511WYWW pt	3322002	3322002
3314221216	3357281	3357281	3314923216	3341351	3341351	3315120	33240	33240
3314221YVW	3357200	3357200	3314923221	3341399	3341399	3315120101	3324063	3324063
3314223	33574 pt	33575 pt	3314923YVW	3341300	3341300	3315120106	3324064	3324064
3314223300 pt	3357402	3357500 pt	3314927	33414	33414	3315120216	3324067	3324067
3314223300 pt	3357400 pt	3357500 pt	3314927101 pt	3341431 pt	3341405	3315120311	3324066	3324066
331422W	33570 pt	33570 pt	3314927101 pt	3341431 pt	3341434	3315120YWW	3324000	3324000
331422WYWW	3357000 pt	3357000 pt	3314927101 pt	3341431 pt	3341444	3315120YWW	3324002	3324002
331422WYWW	3357002 pt	3357002 pt	3314927206	3341411	3341411	3315131	33252	33252
3314230 pt	33410 pt	33410 pt	3314927YVW	3341400	3341400	3315131101	3325211	3325211
3314230 pt	33412	33412	3314929	33415	33415	3315131206	3325215	3325215
3314230 pt	33990 pt	33990 pt	3314929101	3341525	3341525	3315131211	3325219	3325219
3314230 pt	33991 pt	33991 pt	3314929206	3341535	3341535	3315131YVW	3325200	3325200
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3314230106	3399133	3399133	3314929YVW	3341500	3341500	3315133101	3325421	3325421
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3314230311	3341231	3341231	331492A pt	33416	33416	3315133YVW	3325400	3325400
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3314230YVW pt	3399002 pt	3399002 pt	331492A206	3313488	3313489 pt	331513W	33250	33250
3314911	33561	33561	331492A311	3313499	3313498 pt	331513WYWW	3325000	3325000
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3314919101	3356381	3356381	3315113	33212	33212	3315240416	3365073	3365073
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3314919111	3356386	3356386	3315113206	3321224	3321224	3315240YVW	3365000	3365000
3314919116	3356391	3356391	3315113211	3321231	3321231	3315240YVW	3365002	3365002
3314919YVW	3356300	3356300	3315113216	3321233	3321233	3315250	33660	33660
331491C	33569	33569	3315113221	3321240	3321240	3315250101	3366020	3366020
331491C101	3356934	3356934	3315113YVW	3321200	3321200	3315250206	3366021	3366021
331491C106	3356951	3356951	3315115	33217	33217	3315250221	3366025	3366025
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331491C216	3356993	3356993	3315151YVW	3321700	3321700	3315250536	3366041	3366041
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331491E	33576	33576	3315117101	3321822	3321822	3315250546	3366061	3366061
331491E100	3357600	3357600	3315117106	3321824	3321824	3315250651	3366072	3366072
331491G	33577	33577	3315117111	3321827	3321827	3315250YVW	3366000	3366000
331491G100	3357700	3357700	3315117116	3321830	3321830	3315250YVW	3366002	3366002
331491W pt	33560	33560	3315117121	3321833	3321833	3315280	33690	33690
331491W pt	33570 pt	33570 pt	3315117126	3321836	3321836	3315280116	3369085	3369085
331491WYVW pt	3356000	3356000	3315117YVW	3321800	3321800	3315280201	3369011	3369011
331491WYVW pt	3357000 pt	3357000 pt	3315119	33219	33219	3315280206	3369015	3369015
331491WYVW pt	3356002	3356002	3315119101	3321931	3321931	3315280211	3369023	3369023
331491WYVW pt	3356002	3356002	3315119111	3321949	3321949	3315280221 pt	3369099 pt	3369099 pt
331491WYVW pt	3357002 pt	3357002 pt	3315119116	3321998	3321998	3315280221 pt	3369099 pt	3369099 pt
			3315119206	3321939	3321939	3315280YVW	3369000	3369000
			3315119YVW	3321900	3321900	3315280YVW	3369002	3369002





# Iron and Steel Forging

# 1997

Issued October 1999

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## 1997 Economic Census

*Manufacturing*

Industry Series



## U S C E N S U S B U R E A U

*Helping You Make Informed Decisions*

U.S. Department of Commerce  
Economics and Statistics Administration  
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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director

---



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.



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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufac-ture (\$1,000)	Cost of materials (\$1,000)	Value of ship-ments (\$1,000)	Total capital ex-pen-di-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332111</b>	<b>Iron &amp; steel forging</b> .....	<b>392</b>	<b>418</b>	<b>26 243</b>	<b>1 027 951</b>	<b>19 950</b>	<b>42 481</b>	<b>697 720</b>	<b>2 380 916</b>	<b>2 543 399</b>	<b>4 882 053</b>	<b>231 751</b>
346200	Iron & steel forgings .....	N	418	26 243	1 027 951	19 950	42 481	697 720	2 380 916	2 543 399	4 882 053	231 751

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufac-ture (\$1,000)	Cost of materials (\$1,000)	Value of ship-ments (\$1,000)	Total capital ex-pen-di-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332111, IRON &amp; STEEL FORGING</b>												
<b>United States</b> .....	<b>1</b>	<b>418</b>	<b>198</b>	<b>26 243</b>	<b>1 027 951</b>	<b>19 950</b>	<b>42 481</b>	<b>697 720</b>	<b>2 380 916</b>	<b>2 543 399</b>	<b>4 882 053</b>	<b>231 751</b>
California .....	3	34	12	1 620	72 376	1 261	3 046	46 982	154 737	245 973	391 185	11 821
Connecticut .....	4	3	3	448	15 973	363	804	11 593	30 193	24 788	55 069	2 649
Illinois .....	2	40	23	2 393	88 650	1 819	3 792	60 659	177 474	164 734	339 790	16 810
Indiana .....	-	15	11	1 105	37 861	810	1 798	26 449	94 439	134 437	218 542	10 584
Kentucky .....	1	10	4	770	23 175	633	1 389	16 903	72 290	73 054	144 871	11 520
Massachusetts .....	7	6	3	1 182	57 419	971	2 138	31 341	99 491	78 515	171 816	7 139
Michigan .....	-	39	21	2 027	88 303	1 433	3 083	56 063	248 167	297 705	544 876	28 504
Missouri .....	5	6	2	166	3 804	112	169	2 665	8 374	9 935	18 256	516
New Jersey .....	1	7	2	192	7 507	139	305	4 451	16 651	18 910	34 490	1 751
New York .....	1	16	8	599	19 511	468	990	14 738	48 607	52 571	97 577	4 978
North Carolina .....	-	9	5	811	28 242	660	1 430	20 031	44 426	67 224	108 251	12 072
Ohio .....	1	43	34	3 810	152 107	2 758	5 994	106 602	364 156	394 359	763 619	37 101
Oregon .....	3	8	1	107	3 020	86	164	2 181	7 860	4 055	11 732	180
Pennsylvania .....	1	34	21	2 912	109 949	2 125	4 530	69 835	263 576	207 351	473 393	16 244
Tennessee .....	-	12	5	976	32 539	797	1 765	25 561	81 797	53 752	134 722	7 115
Texas .....	1	38	17	3 381	138 529	2 586	5 528	95 081	341 019	408 694	742 552	42 613
Wisconsin .....	-	12	7	2 180	96 596	1 684	3 102	69 150	201 320	195 881	393 817	15 118

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332111, IRON &amp; STEEL FORGING</b>		<b>332111, IRON &amp; STEEL FORGING—Con.</b>	
Companies <sup>1</sup> .....	number.. 392	Value added .....	\$1,000.. 2 380 916
All establishments .....	number.. 418	Total inventories, beginning of year .....	\$1,000.. 697 189
Establishments with 1 to 19 employees .....	number.. 220	Finished goods inventories, beginning of year .....	\$1,000.. 100 515
Establishments with 20 to 99 employees .....	number.. 120	Work-in-process inventories, beginning of year .....	\$1,000.. 354 643
Establishments with 100 employees or more .....	number.. 78	Materials and supplies inventories, beginning of year .....	\$1,000.. 242 031
All employees .....	number.. 26 243	Total inventories, end of year .....	\$1,000.. 803 578
Total compensation <sup>2</sup> .....	\$1,000.. 1 325 206	Finished goods inventories, end of year .....	\$1,000.. 114 954
Annual payroll .....	\$1,000.. 1 027 951	Work-in-process inventories, end of year .....	\$1,000.. 382 466
Total fringe benefits .....	\$1,000.. 297 255	Materials and supplies inventories, end of year .....	\$1,000.. 306 158
Production workers, average for year .....	number.. 19 950	Gross book value of total assets at beginning of year .....	\$1,000.. 2 439 480
Production workers on March 12 .....	number.. 19 891	Total capital expenditures (new and used) .....	\$1,000.. 231 751
Production workers on May 12 .....	number.. 19 903	Capital expenditures for buildings and other structures	
Production workers on August 12 .....	number.. 19 965	(new and used) .....	\$1,000.. 28 266
Production workers on November 12 .....	number.. 20 041	Capital expenditures for machinery and equipment (new	
Production-worker hours .....	1,000.. 42 481	and used) .....	\$1,000.. 203 485
Production-worker wages .....	\$1,000.. 697 720	Total retirements <sup>2</sup> .....	\$1,000.. 49 525
Total cost of materials .....	\$1,000.. 2 543 399	Gross book value of total assets at end of year .....	\$1,000.. 2 621 706
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 2 118 159	Total depreciation during year <sup>2</sup> .....	\$1,000.. 160 898
Cost of resales .....	\$1,000.. 31 663	Total rental payments <sup>2</sup> .....	\$1,000.. 34 239
Cost of fuels .....	\$1,000.. 79 385	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 12 132
Cost of purchased electricity .....	\$1,000.. 97 415	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 22 107
Cost of contract work .....	\$1,000.. 216 777	Cost of purchased services for the repair of buildings and other	
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 1 672 402	structures <sup>3</sup> .....	\$1,000.. 11 720
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. -	Response coverage ratio <sup>4</sup> .....	percent.. 71
Total value of shipments .....	\$1,000.. 4 882 053	Cost of purchased services for the repair of machinery and	
Primary products value of shipments .....	\$1,000.. 4 375 746	equipment <sup>3</sup> .....	\$1,000.. 61 378
Secondary products value of shipments .....	\$1,000.. 387 737	Response coverage ratio <sup>4</sup> .....	percent.. 71
Total miscellaneous receipts .....	\$1,000.. 118 570	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 12 770
Value of resales .....	\$1,000.. 39 102	Response coverage ratio <sup>4</sup> .....	percent.. 71
Contract receipts .....	\$1,000.. D	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 4 030
Other miscellaneous receipts .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 71
Primary products specialization ratio .....	percent.. 91	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 1 914
Value of primary products shipments made in all industries .....	\$1,000.. 4 631 452	Response coverage ratio <sup>4</sup> .....	percent.. 71
Value of primary products shipments made in this industry .....	\$1,000.. 4 375 746	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 1 777
Value of primary products shipments made in other		Response coverage ratio <sup>4</sup> .....	percent.. 71
industries .....	\$1,000.. 255 706	Cost of purchased software and other data processing	
Coverage ratio .....	percent.. 94	services <sup>3</sup> .....	\$1,000.. 7 963
		Response coverage ratio <sup>4</sup> .....	percent.. 71
		Cost of purchased refuse removal (including hazardous waste)	
		services <sup>3</sup> .....	\$1,000.. 5 904
		Response coverage ratio <sup>4</sup> .....	percent.. 71

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332111, IRON &amp; STEEL FORGING</b>												
<b>All establishments . . . . .</b>	<b>1</b>	<b>418</b>	<b>198</b>	<b>26 243</b>	<b>1 027 951</b>	<b>19 950</b>	<b>42 481</b>	<b>697 720</b>	<b>2 380 916</b>	<b>2 543 399</b>	<b>4 882 053</b>	<b>231 751</b>
Establishments with 1 to 4 employees . . . . .	9	122	—	234	6 826	187	337	5 131	13 414	13 546	27 017	1 166
Establishments with 5 to 9 employees . . . . .	9	48	—	319	10 134	253	455	7 598	19 722	20 529	40 268	1 749
Establishments with 10 to 19 employees . . . . .	4	50	—	721	22 463	541	1 053	15 830	53 692	54 114	107 121	3 880
Establishments with 20 to 49 employees . . . . .	2	69	69	2 136	72 951	1 607	3 472	48 752	173 134	179 976	350 682	15 265
Establishments with 50 to 99 employees . . . . .	1	51	51	3 894	130 233	2 817	5 901	83 218	291 906	322 116	611 883	36 032
Establishments with 100 to 249 employees . . . . .	1	53	53	8 208	317 190	6 426	13 679	220 580	727 135	827 804	1 540 640	67 329
Establishments with 250 to 499 employees . . . . .	1	21	21	7 183	291 696	5 456	11 645	206 660	713 522	756 461	1 460 334	69 318
Establishments with 500 to 999 employees . . . . .	2	3	3	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees . . . . .	—	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more . . . . .	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records <sup>2</sup> . . . . .	9	173	—	928	26 596	729	1 275	20 020	51 779	51 328	103 486	4 604

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332111</b>	<b>Iron &amp; steel forging . . . . .</b>	<b>418</b>	<b>26 243</b>	<b>1 027 951</b>	<b>19 950</b>	<b>42 481</b>	<b>697 720</b>	<b>2 380 916</b>	<b>2 543 399</b>	<b>4 882 053</b>	<b>231 751</b>
3321111	Hot impression die impact, press, and upset steel forgings . . . . .	133	17 656	709 352	13 467	28 457	482 349	1 664 722	1 651 276	3 297 445	160 220
3321113	Cold impression die impact, press, and upset steel forgings . . . . .	13	1 516	56 577	1 135	2 820	38 770	136 643	149 790	284 604	17 954
3321115	Seamless rolled ring forgings, ferrous, not made in steel mills . . . . .	21	1 514	70 576	1 088	2 586	47 778	180 171	316 071	476 916	14 639
3321117	Open die or smith forgings (hammer or press), ferrous, not made in steel mills . . . . .	30	3 347	125 546	2 528	5 489	80 145	265 407	275 291	537 662	26 289

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332111</b>	<b>Iron and steel forgings</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>4 631 452</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>3 140 952</b>
3321111	Hot impression die impact, press, and upset steel forgings .....	N	X	X	3 131 217	N	X	X	2 142 359
33211111	Hot impression die impact, press, and upset carbon steel forgings .....	N	X	X	1 334 704	N	X	X	N
3321111101	Hot impression die impact, press, and upset carbon steel forgings ..... 1,000 s tons ..	110	X	9765.6	1 334 704	108	X	9583.0	915 145
33211112	Hot impression die impact, press, and upset alloy steel forgings, excluding stainless and hi-temp .....	N	X	X	1 068 337	N	X	X	N
3321111206	Hot impression die impact, press, and upset alloy steel forgings, excluding stainless and hi-temp ..... 1,000 s tons ..	77	X	526.5	1 068 337	76	X	490.6	700 475
33211113	Hot impression die impact, press, and upset stainless steel forgings .....	N	X	X	111 713	N	X	X	N
3321111311	Hot impression die impact, press, and upset stainless steel forgings ..... 1,000 s tons ..	46	X	14.6	111 713	43	X	15.4	104 700
33211114	Hot impression die impact, press, and upset hi-temp (iron, nickel, or cobalt-base alloy) steel forgings .....	N	X	X	389 369	N	X	X	N
3321111416	Hot impression die impact, press, and upset hi-temp (iron, nickel, or cobalt-base alloy) steel forgings ..... 1,000 s tons ..	20	X	7.5	389 369	26	X	5.1	273 195
3321111Y	Hot impression die impact, press, and upset steel forgings, nsk .....	N	X	X	227 094	N	X	X	N
3321111YWV	Hot impression die impact, press, and upset steel forgings, nsk .....	N	X	X	227 094	N	X	X	148 844
3321113	Cold impression die impact, press, and upset steel forgings .....	N	X	X	321 023	N	X	X	255 260
33211131	Cold impression die impact, press, and upset steel forgings .....	N	X	X	316 336	N	X	X	N
3321113101	Cold impression die impact, press, and upset carbon steel forgings ..... 1,000 s tons ..	11	X	149.1	200 916	13	X	947.6	108 508
3321113106	Cold impression die impact, press, and upset alloy steel forgings ..... 1,000 s tons ..	8	X	D	D	8	X	65.1	101 995
3321113111	Cold impression die impact, press, and upset stainless steel and hi-temp (iron, nickel, or cobalt-base alloy) forgings ..... 1,000 s tons ..	2	X	D	D	3	X	S	5 153
3321113Y	Cold impression die impact, press, and upset steel forgings, nsk .....	N	X	X	4 687	N	X	X	N
3321113YWV	Cold impression die impact, press, and upset steel forgings, nsk .....	N	X	X	4 687	N	X	X	39 604
3321115	Seamless rolled ring forgings, ferrous, not made in steel mills .....	N	X	X	396 605	N	X	X	157 229
33211151	Seamless rolled ring forgings, ferrous, not made in steel mills .....	N	X	X	396 605	N	X	X	N
3321115101	Seamless carbon steel and alloy steel rolled ring forgings, excluding stainless and hi-temp, not made in steel mills \$ .....	25	X	X	256 718	20	X	X	76 168
3321115106	Seamless stainless steel and hi-temp (iron, nickel, or cobalt-base alloy) rolled ring forgings, not made in steel mills \$ .....	13	X	X	139 887	15	X	X	81 049
3321115Y	Seamless rolled ring forgings, ferrous (not made in steel mills), nsk .....	N	X	X	-	N	X	X	N
3321115YWV	Seamless rolled ring forgings, ferrous (not made in steel mills), nsk .....	N	X	X	-	N	X	X	Z
3321117	Open die or smith forgings (hammer or press), ferrous, not made in steel mills .....	N	X	X	505 124	N	X	X	330 119
33211171	Open die or smith forgings (hammer or press), ferrous, not made in steel mills .....	N	X	X	504 974	N	X	X	N
3321117101	Carbon and alloy steel open die or smith forgings (hammer or press), excluding stainless and hi-temp, not made in steel mills \$ .....	38	X	X	313 867	41	X	X	291 586
3321117106	Stainless steel and hi-temp (iron, nickel, or cobalt-base alloy) open die or smith forgings (hammer or press), not made in steel mills \$ .....	21	X	X	191 107	21	X	X	38 192
3321117Y	Open die or smith forgings (hammer or press), ferrous (not made in steel mills), nsk .....	N	X	X	150	N	X	X	N
3321117YWV	Open die or smith forgings (hammer or press), ferrous (not made in steel mills), nsk .....	N	X	X	150	N	X	X	341
332111W	Iron and steel forgings, nsk, total .....	N	X	X	277 483	N	X	X	255 985
332111WY	Iron and steel forgings, nsk, total .....	N	X	X	277 483	N	X	X	N
332111WYWV	Iron and steel forgings, nsk, for nonadministrative-record establishments .....	N	X	X	173 249	N	X	X	211 219
332111WYWY	Iron and steel forgings, nsk, for administrative-record establishments .....	N	X	X	104 234	N	X	X	44 766

See footnotes at end of table.

**Table 6a. Products Statistics: 1997 and 1992—Con.**

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3321111</b>	<b>HOT IMPRESSION DIE IMPACT, PRESS, AND UPSET STEEL FORGINGS</b>		
	<b>United States</b> .....	<b>3 131 217</b>	<b>2 142 359</b>
	California .....	77 745	70 258
	Colorado .....	48 427	N
	Connecticut .....	50 756	39 067
	Illinois .....	262 460	184 886
	Indiana .....	59 837	85 581
	Kentucky .....	132 032	N
	Michigan .....	406 074	244 386
	New York .....	20 032	22 112
	Ohio .....	551 665	330 107
	Pennsylvania .....	250 874	250 293
	Texas .....	439 747	206 307
	Wisconsin .....	264 200	157 578
<b>3321113</b>	<b>COLD IMPRESSION DIE IMPACT, PRESS, AND UPSET STEEL FORGINGS</b>		
	<b>United States</b> .....	<b>321 023</b>	<b>255 260</b>
	Michigan .....	71 253	N
<b>3321115</b>	<b>SEAMLESS ROLLED RING FORGINGS, FERROUS, NOT MADE IN STEEL MILLS</b>		
	<b>United States</b> .....	<b>396 605</b>	<b>157 229</b>
	California .....	139 175	45 223
	New York .....	56 310	N
<b>3321117</b>	<b>OPEN DIE OR SMITH FORGINGS (HAMMER OR PRESS), FERROUS, NOT MADE IN STEEL MILLS</b>		
	<b>United States</b> .....	<b>505 124</b>	<b>330 119</b>
	California .....	112 750	22 888
	Illinois .....	38 097	N
	New York .....	8 300	4 758
	Ohio .....	35 273	29 000
	Pennsylvania .....	150 504	111 301
	Texas .....	77 742	52 203

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332111</b>	<b>IRON &amp; STEEL FORGING</b>				
33200081	Fabricated metal products (except forgings) .....	X	10 680	X	17 541
33210001	Forgings .....	P182.9	313 023	P46.3	81 747
33100035	Castings (rough and semifinished) .....	X	D	X	10 819
33120005	Steel ingot and semifinished shapes (blooms, billets, and slabs) (except castings, forgings, and fabr. metal products) .....	273.4	163 619	Q275.5	259 641
33120065	Steel bars, bar shapes, and other shapes and forms (except castings, forgings, and fabricated metal products) .....	1 196.8	708 853	P803.5	475 247
33149101	Titanium and titanium-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	3.0	79 706	2.0	32 648
33100074	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	D	D	X	N
33100039	Aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	8.4	24 788	Q3.0	8 290
33149103	Nickel and nickel-base alloy, including nickel-copper alloys (except castings, forgings, and fabricated metal products) .....	41.3	112 308	4.5	38 200
33351400	Forging dies .....	S	43 125	S	17 785
00970099	All other materials and components, parts, containers, and supplies .....	X	275 493	X	136 158
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	368 331	X	187 348

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.



# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332111 IRON AND STEEL FORGING**

This U.S. industry comprises establishments primarily engaged in manufacturing iron and steel forgings from purchased iron and steel by hammering mill shapes. Establishments making iron and steel forgings and further manufacturing (e.g., machining, assembling) a specific manufactured product are classified in the industry of the

finished product. Iron and steel forging establishments may perform surface finishing operations, such as cleaning and deburring, on the forgings they manufacture.

The data published with NAICS code 332111 include the following SIC industry:

3462 Iron and steel forgings

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.



In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F.

## Footnotes for Products Statistics and Materials Consumed by Kind

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### Part 1. Products Statistics (Tables 6a and 6b)

NAICS product code	Footnote
\$ 3321115101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3321115106 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3321117101 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.
\$ 3321117106 .....	This product code is primary to more than one industry. For a list of product codes that are primary to more than one industry, see "1997 Economic Census, Numerical List of Manufactured and Mineral Products," Appendix D.

### Part 2. Materials Consumed by Kind (Table 7)

Not applicable.











1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3329991	34971	34971	332999AYWV	3499500	3499500	332999GYWV pt...	3999900 pt	3999900 pt
3329991101	3497132	3497132	332999G pt	32918 pt	32918 pt	332999W pt	32910 pt	32910 pt
3329991106	3497133	3497133	332999G pt	34323 pt	34323 pt	332999W pt	34320 pt	34320 pt
3329991111	3497137	3497137	332999G pt	34945 pt	34945 pt	332999W pt	34940 pt	34940 pt
3329991YWV	3497100	3497100	332999G pt	34998 pt	34998 pt	332999W pt	34970 pt	34970 pt
3329993	34973	34973	332999G pt	34998 pt	34998 pt	332999W pt	34990 pt	34990 pt
3329993101	3497352	3497352	332999G pt	35373 pt	35373 pt	332999W pt	35370 pt	35370 pt
3329993106	3497354	3497354	332999G pt	39999 pt	39999 pt	332999W pt	35990 pt	35990 pt
3329993111	3497358	3497358	332999G101	3499811	3499811	332999WYWWW pt...	3291000 pt	3291000 pt
3329993YWV	3497300	3497300	332999G106	3499819	3499819	332999WYWWW pt...	3432000 pt	3432000 pt
3329994	35994 pt	35994 pt	332999G189	3494571	3494571	332999WYWWW pt...	3494000 pt	3494000 pt
3329994101	3599411	3599411	332999G301	3499829	3499829	332999WYWWW pt...	3497000 pt	3497000 pt
3329994106	3599413	3599413	332999G303	3499839	3499839	332999WYWWW pt...	3499000 pt	3499000 pt
3329994111	3599415	3599415	332999G305	3537331	3537331	332999WYWWW pt...	3537000 pt	3537000 pt
3329994116	3599416	3599416	332999G306 pt	3999991 pt	3999913 pt	332999WYWWW pt...	3599000 pt	3599000 pt
3329994121	3599425	3599425	332999G306 pt	3999991 pt	3999944 pt	332999WYWWW pt...	3999000 pt	3999000 pt
3329994YWV	3599400 pt	3599400 pt	332999G306 pt	3999991 pt	3999999 pt	332999WYWY pt...	3291002 pt	3291002 pt
3329997	34992	34992	332999G313	3291831	3291831	332999WYWY pt...	3432002 pt	3432002 pt
3329997101	3499211	3499211	332999G316	3291835	3291890 pt	332999WYWY pt...	3494002 pt	3494002 pt
3329997106	3499213	3499213	332999G399 pt	3432329	3432332 pt	332999WYWY pt...	3497002 pt	3497002 pt
3329997YWV	3499200	3499200	332999G399 pt	3499898	3499899 pt	332999WYWY pt...	3499002 pt	3499002 pt
3329999	34993	34993	332999GYWV pt...	3291800 pt	3291800 pt	332999WYWY pt...	3537002 pt	3537002 pt
3329999100	3499300	3499300	332999GYWV pt...	3432300 pt	3432300 pt	332999WYWY pt...	3599002 pt	3599002 pt
332999A	34995	34995	332999GYWV pt...	3499800 pt	3499800 pt	332999WYWY pt...	3999002 pt	3999002 pt
332999A101	3499511	3499511	332999GYWV pt...	3537300 pt	3537300 pt			
332999A106	3499521	3499521						
332999A111	3499531	3499531						
332999A116	3499539	3499539						



# Nonferrous Forging

# 1997

Issued October 1999

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## 1997 Economic Census

*Manufacturing*

Industry Series



# U S C E N S U S B U R E A U

*Helping You Make Informed Decisions*

U.S. Department of Commerce  
Economics and Statistics Administration  
U.S. CENSUS BUREAU



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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the



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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332112</b>	<b>Nonferrous forging</b> .....	<b>76</b>	<b>84</b>	<b>9 129</b>	<b>366 879</b>	<b>6 952</b>	<b>15 422</b>	<b>258 946</b>	<b>1 004 293</b>	<b>865 845</b>	<b>1 858 708</b>	<b>126 844</b>
346300	Nonferrous forgings .....	N	84	9 129	366 879	6 952	15 422	258 946	1 004 293	865 845	1 858 708	126 844

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332112, NONFERROUS FORGING</b>												
<b>United States</b> .....	-	<b>84</b>	<b>48</b>	<b>9 129</b>	<b>366 879</b>	<b>6 952</b>	<b>15 422</b>	<b>258 946</b>	<b>1 004 293</b>	<b>865 845</b>	<b>1 858 708</b>	<b>126 844</b>
California .....	-	16	14	2 167	88 040	1 741	4 085	62 502	234 849	178 070	403 447	20 893
Illinois .....	-	8	5	959	41 935	696	1 654	31 724	118 409	99 802	216 041	12 994
Michigan .....	1	10	7	494	19 207	401	891	14 693	47 441	48 453	95 556	6 059
Pennsylvania .....	-	8	4	519	23 263	388	1 086	17 200	43 591	58 242	110 527	1 679

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332112, NONFERROUS FORGING</b>		<b>332112, NONFERROUS FORGING—Con.</b>	
Companies <sup>1</sup> .....	76	Value added .....	\$1,000.. 1 004 293
All establishments .....	84	Total inventories, beginning of year .....	\$1,000.. 276 875
Establishments with 1 to 19 employees .....	36	Finished goods inventories, beginning of year .....	\$1,000.. 41 522
Establishments with 20 to 99 employees .....	23	Work-in-process inventories, beginning of year .....	\$1,000.. 162 593
Establishments with 100 employees or more .....	25	Materials and supplies inventories, beginning of year .....	\$1,000.. 72 760
All employees .....	9 129	Total inventories, end of year .....	\$1,000.. 315 028
Total compensation <sup>2</sup> .....	\$1,000.. 471 494	Finished goods inventories, end of year .....	\$1,000.. 36 629
Annual payroll .....	\$1,000.. 366 879	Work-in-process inventories, end of year .....	\$1,000.. 178 916
Total fringe benefits .....	\$1,000.. 104 615	Materials and supplies inventories, end of year .....	\$1,000.. 99 483
Production workers, average for year .....	6 952	Gross book value of total assets at beginning of year .....	\$1,000.. 699 183
Production workers on March 12 .....	6 926	Total capital expenditures (new and used) .....	\$1,000.. 126 844
Production workers on May 12 .....	6 906	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 21 640
Production workers on August 12 .....	6 978	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 105 204
Production workers on November 12 .....	6 998	Total retirements <sup>2</sup> .....	\$1,000.. 23 415
Production-worker hours .....	15 422	Gross book value of total assets at end of year .....	\$1,000.. 802 612
Production-worker wages .....	\$1,000.. 258 946	Total depreciation during year <sup>2</sup> .....	\$1,000.. 56 334
Total cost of materials .....	\$1,000.. 865 845	Total rental payments <sup>2</sup> .....	\$1,000.. 15 751
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 621 696	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 6 504
Cost of resales .....	\$1,000.. 7 606	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 9 247
Cost of fuels .....	\$1,000.. 25 020	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 2 424
Cost of purchased electricity .....	\$1,000.. 27 067	Response coverage ratio <sup>4</sup> .....	percent.. 90
Cost of contract work .....	\$1,000.. 184 456	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 14 496
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 455 565	Response coverage ratio <sup>4</sup> .....	percent.. 90
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 1 491
Total value of shipments .....	\$1,000.. 1 858 708	Response coverage ratio <sup>4</sup> .....	percent.. 90
Primary products value of shipments .....	\$1,000.. 1 733 083	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 1 726
Secondary products value of shipments .....	\$1,000.. 85 107	Response coverage ratio <sup>4</sup> .....	percent.. 90
Total miscellaneous receipts .....	\$1,000.. 40 518	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 401
Value of resales .....	\$1,000.. 16 622	Response coverage ratio <sup>4</sup> .....	percent.. 90
Contract receipts .....	\$1,000.. D	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 3 124
Other miscellaneous receipts .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 90
Primary products specialization ratio .....	percent.. 95	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 558
Value of primary products shipments made in all industries .....	\$1,000.. 2 029 677	Response coverage ratio <sup>4</sup> .....	percent.. 90
Value of primary products shipments made in this industry .....	\$1,000.. 1 733 083	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 2 253
Value of primary products shipments made in other industries .....	\$1,000.. 296 594	Response coverage ratio <sup>4</sup> .....	percent.. 90
Coverage ratio .....	percent.. 85		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332112, NONFERROUS FORGING</b>												
<b>All establishments .....</b>	-	<b>84</b>	<b>48</b>	<b>9 129</b>	<b>366 879</b>	<b>6 952</b>	<b>15 422</b>	<b>258 946</b>	<b>1 004 293</b>	<b>865 845</b>	<b>1 858 708</b>	<b>126 844</b>
Establishments with 1 to 4 employees .....	9	16	-	36	1 307	27	56	862	3 615	3 250	6 915	220
Establishments with 5 to 9 employees .....	7	11	-	72	2 600	52	111	1 725	7 616	7 234	15 081	392
Establishments with 10 to 19 employees .....	6	9	-	131	4 884	87	193	2 989	14 280	12 966	27 270	705
Establishments with 20 to 49 employees .....	3	13	13	507	18 746	332	719	11 577	49 322	41 030	91 479	3 272
Establishments with 50 to 99 employees .....	-	10	10	695	32 797	542	1 237	22 092	77 448	69 560	140 943	6 523
Establishments with 100 to 249 employees .....	-	15	15	2 280	95 005	1 797	4 173	69 052	250 459	262 528	518 852	34 169
Establishments with 250 to 499 employees .....	-	7	7	2 148	68 478	1 611	3 390	49 348	224 096	169 227	383 486	24 573
Establishments with 500 to 999 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	2	2	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	28	-	168	6 149	117	254	4 054	17 004	15 291	32 533	1 040

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332112</b>	<b>Nonferrous forging .....</b>	<b>84</b>	<b>9 129</b>	<b>366 879</b>	<b>6 952</b>	<b>15 422</b>	<b>258 946</b>	<b>1 004 293</b>	<b>865 845</b>	<b>1 858 708</b>	<b>126 844</b>
3321121	Hot impression die impact, press, and upset nonferrous forgings .....	42	6 549	280 023	5 153	12 195	205 052	764 787	682 447	1 441 105	101 178
3321122	Other nonferrous forgings .....	10	2 349	78 830	1 639	2 906	48 876	217 573	164 361	376 372	23 751

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332112</b>	<b>Nonferrous forgings</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>2 029 677</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>1 233 527</b>
3321121	Hot impression die impact, press, and upset nonferrous forgings @ .....	N	X	X	1 540 013	N	X	X	965 101
33211211	Hot impression die impact, press, and upset aluminum and aluminum alloy forgings .....	N	X	X	905 078	N	X	X	N
3321121101	Hot impression die impact, press, and upset aluminum and aluminum alloy forgings .....1,000 s tons ..	36	X	73.6	905 078	31	X	P58.9	556 359
33211212	Hot impression die impact, press, and upset titanium and titanium alloy forgings .....	N	X	X	324 580	N	X	X	N
3321121206	Hot impression die impact, press, and upset titanium and titanium alloy forgings .....1,000 s tons ..	25	X	16.8	324 580	22	X	X	192 684
33211213	Other hot impression die impact, press, and upset nonferrous .....	N	X	X	295 513	N	X	X	N
3321121311	Hot impression die impact, press, and upset copper and copper-base alloy forgings .....1,000 s tons ..	9	X	7.9	37 416	10	X	P15.3	87 707
3321121316	Other hot impression die impact, press, and upset nonferrous forgings .....1,000 s tons ..	21	X	17.2	258 097	13	X	S	119 410
3321121Y	Hot impression die impact, press, and upset nonferrous forgings, nsk .....	N	X	X	14 842	N	X	X	N
3321121YWV	Hot impression die impact, press, and upset nonferrous forgings, nsk .....	N	X	X	14 842	N	X	X	8 941
3321122	Other nonferrous forgings .....	N	X	X	452 300	N	X	X	172 350
33211221	Other nonferrous forgings .....	N	X	X	447 833	N	X	X	N
3321122101	Cold impression die impact, press, and upset nonferrous forgings .....1,000 s tons ..	7	X	D	D	5	X	X	79 690
3321122106	Seamless rolled ring nonferrous forgings .....1,000 s tons ..	6	X	5.0	68 689	7	X	P2.1	30 246
3321122111	Open die or smith nonferrous forgings, hammer or press .....1,000 s tons ..	9	X	D	D	10	X	X	19 560
3321122Y	Other nonferrous forgings, nsk .....	N	X	X	4 467	N	X	X	N
3321122YWV	Other nonferrous forgings, nsk .....	N	X	X	4 467	N	X	X	42 854
332112W	Nonferrous forgings, nsk, total .....	N	X	X	37 364	N	X	X	96 076
332112WY	Nonferrous forgings, nsk, total .....	N	X	X	37 364	N	X	X	N
332112WYWV	Nonferrous forgings, nsk, for nonadministrative-record establishments .....	N	X	X	9 242	N	X	X	89 478
332112WYWY	Nonferrous forgings, nsk, for administrative-record establishments .....	N	X	X	28 122	N	X	X	6 598

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3321121</b>	<b>HOT IMPRESSION DIE IMPACT, PRESS, AND UPSET NONFERROUS FORGINGS @</b>		
	<b>United States</b> .....	<b>1 540 013</b>	<b>965 101</b>
	California .....	335 502	176 057
	Illinois .....	112 146	N
	Michigan .....	89 678	N
	Pennsylvania .....	86 062	95 502
	Texas .....	94 076	35 192
<b>3321122</b>	<b>OTHER NONFERROUS FORGINGS</b>		
	<b>United States</b> .....	<b>452 300</b>	<b>172 350</b>
	California .....	88 338	58 973

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332112</b>	<b>NONFERROUS FORGING</b>				
33200081	Fabricated metal products (except forgings) .....	X	D	X	N
33210001	Forgings .....1,000 s tons..	7.3	73 941	D	D
33100035	Castings (rough and semifinished) .....	X	D	X	N
33120005	Steel ingot and semifinished shapes (blooms, billets, and slabs) (except castings, forgings, and fabr. metal products) .....1,000 s tons..	D	D	3.9	11 119
33120065	Steel bars, bar shapes, and other shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	D	D	S	2 347
33149101	Titanium and titanium-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	138.8	67 498	230.3	62 846
33100074	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	D	D	X	N
33100039	Aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....1,000 s tons..	161.4	200 790	118.3	171 913
33149103	Nickel and nickel-base alloy, including nickel-copper alloys (except castings, forgings, and fabricated metal products) .....1,000 s tons..	0.4	3 464	D	D
33351400	Forging dies. ....1,000 s tons..	2.1	8 223	S	11 739
00970099	All other materials and components, parts, containers, and supplies .....	X	72 558	X	57 158
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	13 710	X	34 067

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It



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includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332112 NONFERROUS FORGING**

This U.S. industry comprises establishments primarily engaged in manufacturing nonferrous forgings from purchased nonferrous metals by hammering mill shapes. Establishments making nonferrous forgings and further manufacturing (e.g., machining, assembling) a specific manufactured product are classified in the industry of the

finished product. Nonferrous forging establishments may perform surface finishing operations, such as cleaning and deburring, on the forgings they manufacture.

The data published with NAICS code 332112 include the following SIC industry:

3463 Nonferrous forgings

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.



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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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## Part 1. **Products Statistics (Tables 6a and 6b)**

NAICS product code	Footnote
@3321121 .....	For additional detail, see Current Industrial Report M331D , Aluminum Ingot and Mill Products.

## Part 2. **Materials Consumed by Kind (Table 7)**

Not applicable.











1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3329991	34971	34971	332999AYWV	3499500	3499500	332999GYWV pt...	3999900 pt	3999900 pt
3329991101	3497132	3497132	332999G pt	32918 pt	32918 pt	332999W pt	32910 pt	32910 pt
3329991106	3497133	3497133	332999G pt	34323 pt	34323 pt	332999W pt	34320 pt	34320 pt
3329991111	3497137	3497137	332999G pt	34945 pt	34945 pt	332999W pt	34940 pt	34940 pt
3329991YVV	3497100	3497100	332999G pt	34998 pt	34998 pt	332999W pt	34970 pt	34970 pt
3329993	34973	34973	332999G pt	34998 pt	34998 pt	332999W pt	34990 pt	34990 pt
3329993101	3497352	3497352	332999G pt	35373 pt	35373 pt	332999W pt	35370 pt	35370 pt
3329993106	3497354	3497354	332999G pt	39999 pt	39999 pt	332999W pt	35990 pt	35990 pt
3329993111	3497358	3497358	332999G101	3499811	3499811	332999WYWWW pt...	3291000 pt	3291000 pt
3329993YVV	3497300	3497300	332999G106	3499819	3499819	332999WYWWW pt...	3432000 pt	3432000 pt
3329994	35994 pt	35994 pt	332999G189	3494571	3494571	332999WYWWW pt...	3494000 pt	3494000 pt
3329994101	3599411	3599411	332999G301	3499829	3499829	332999WYWWW pt...	3497000 pt	3497000 pt
3329994106	3599413	3599413	332999G303	3499839	3499839	332999WYWWW pt...	3499000 pt	3499000 pt
3329994111	3599415	3599415	332999G305	3537331	3537331	332999WYWWW pt...	3537000 pt	3537000 pt
3329994116	3599416	3599416	332999G306 pt	3999991 pt	3999991 pt	332999WYWWW pt...	3599000 pt	3599000 pt
3329994121	3599425	3599425	332999G306 pt	3999991 pt	3999991 pt	332999WYWWW pt...	3999000 pt	3999000 pt
3329994YVV	3599400 pt	3599400 pt	332999G306 pt	3999991 pt	3999991 pt	332999WYWWW pt...	3291002 pt	3291002 pt
3329997	34992	34992	332999G313	3291831	3291831	332999WYWWW pt...	3432002 pt	3432002 pt
3329997101	3499211	3499211	332999G316	3291835	3291835	332999WYWWW pt...	3494002 pt	3494002 pt
3329997106	3499213	3499213	332999G399 pt	3432329	3432329	332999WYWWW pt...	3497002 pt	3497002 pt
3329997YVV	3499200	3499200	332999G399 pt	3499898	3499898	332999WYWWW pt...	3499002 pt	3499002 pt
3329999	34993	34993	332999GYWV pt...	3291800 pt	3291800 pt	332999WYWWW pt...	3537002 pt	3537002 pt
3329999100	3499300	3499300	332999GYWV pt...	3432300 pt	3432300 pt	332999WYWWW pt...	3599002 pt	3599002 pt
332999A	34995	34995	332999GYWV pt...	3499800 pt	3499800 pt	332999WYWWW pt...	3999002 pt	3999002 pt
332999A101	3499511	3499511	332999GYWV pt...	3537300 pt	3537300 pt			
332999A106	3499521	3499521						
332999A111	3499531	3499531						
332999A116	3499539	3499539						



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## 1997 Economic Census

*Manufacturing*

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## 1997 Economic Census

*Manufacturing*

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**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division



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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332114</b>	<b>Custom roll forming</b> .....	<b>353</b>	<b>397</b>	<b>14 901</b>	<b>490 329</b>	<b>10 540</b>	<b>21 984</b>	<b>293 101</b>	<b>1 242 026</b>	<b>1 830 313</b>	<b>3 035 073</b>	<b>54 843</b>
344910	Miscellaneous metal work (pt) .	N	397	14 901	490 329	10 540	21 984	293 101	1 242 026	1 830 313	3 035 073	54 843

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332114, CUSTOM ROLL FORMING</b>												
<b>United States</b> .....	-	<b>397</b>	<b>199</b>	<b>14 901</b>	<b>490 329</b>	<b>10 540</b>	<b>21 984</b>	<b>293 101</b>	<b>1 242 026</b>	<b>1 830 313</b>	<b>3 035 073</b>	<b>54 843</b>
Alabama .....	-	8	4	273	7 515	167	358	4 155	18 059	23 323	42 843	585
Arizona .....	-	5	5	180	4 653	128	230	2 927	15 277	35 111	50 696	473
California .....	-	41	20	1 039	34 229	701	1 485	19 855	73 119	107 558	180 426	3 126
Florida .....	-	15	8	894	30 020	615	1 262	16 820	79 631	155 980	223 511	5 747
Illinois .....	-	25	13	1 290	41 512	946	2 031	27 092	107 285	106 756	212 935	4 204
Iowa .....	-	5	4	483	15 694	414	862	11 402	32 114	52 678	84 910	1 753
Kentucky .....	-	6	4	364	12 932	283	605	7 355	30 651	39 737	71 201	1 101
Louisiana .....	-	4	2	114	3 431	75	145	1 879	6 479	18 570	25 049	259
Minnesota .....	-	8	5	298	14 666	137	264	3 496	23 909	26 160	49 939	186
Missouri .....	-	11	2	197	7 022	146	309	4 189	34 018	53 046	79 567	1 905
Nebraska .....	-	3	3	177	5 206	142	292	3 298	18 713	25 880	44 325	579
New York .....	-	19	6	348	11 533	255	492	7 099	24 214	32 180	59 312	973
Ohio .....	-	33	25	2 593	92 587	1 857	4 032	58 191	246 242	302 203	535 880	8 263
Pennsylvania .....	-	20	7	700	24 698	451	917	14 021	70 948	91 765	163 565	2 549
Tennessee .....	-	8	4	204	6 035	133	291	3 497	18 338	21 320	37 690	1 713
Texas .....	1	31	21	1 511	47 083	1 110	2 245	28 311	120 236	226 393	347 030	3 840
Virginia .....	-	10	6	337	10 045	188	415	5 176	21 395	30 237	51 337	868
Washington .....	-	9	4	306	9 488	252	516	6 960	16 486	22 212	38 218	690

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.



**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332114, CUSTOM ROLL FORMING</b>		<b>332114, CUSTOM ROLL FORMING—Con.</b>	
Companies <sup>1</sup> .....	number.. 353	Value added .....	\$.1,000.. 1 242 026
All establishments .....	number.. 397	Total inventories, beginning of year .....	\$.1,000.. 405 044
Establishments with 1 to 19 employees .....	number.. 198	Finished goods inventories, beginning of year .....	\$.1,000.. 131 550
Establishments with 20 to 99 employees .....	number.. 168	Work-in-process inventories, beginning of year .....	\$.1,000.. 67 381
Establishments with 100 employees or more .....	number.. 31	Materials and supplies inventories, beginning of year .....	\$.1,000.. 206 113
All employees .....	number.. 14 901	Total inventories, end of year .....	\$.1,000.. 465 483
Total compensation <sup>2</sup> .....	\$.1,000.. 604 164	Finished goods inventories, end of year .....	\$.1,000.. 139 124
Annual payroll .....	\$.1,000.. 490 329	Work-in-process inventories, end of year .....	\$.1,000.. 97 073
Total fringe benefits .....	\$.1,000.. 113 835	Materials and supplies inventories, end of year .....	\$.1,000.. 229 286
Production workers, average for year .....	number.. 10 540	Gross book value of total assets at beginning of year .....	\$.1,000.. 803 526
Production workers on March 12 .....	number.. 10 384	Total capital expenditures (new and used) .....	\$.1,000.. 54 843
Production workers on May 12 .....	number.. 10 447	Capital expenditures for buildings and other structures (new and used) .....	\$.1,000.. 7 661
Production workers on August 12 .....	number.. 10 597	Capital expenditures for machinery and equipment (new and used) .....	\$.1,000.. 47 182
Production workers on November 12 .....	number.. 10 732	Total retirements <sup>2</sup> .....	\$.1,000.. 27 129
Production-worker hours .....	1,000.. 21 984	Gross book value of total assets at end of year .....	\$.1,000.. 831 240
Production-worker wages .....	\$.1,000.. 293 101	Total depreciation during year <sup>2</sup> .....	\$.1,000.. 58 788
Total cost of materials .....	\$.1,000.. 1 830 313	Total rental payments <sup>2</sup> .....	\$.1,000.. 34 548
Cost of materials, parts, containers, etc., consumed .....	\$.1,000.. 1 653 574	Buildings and other structures rental payments <sup>2</sup> .....	\$.1,000.. 20 872
Cost of resales .....	\$.1,000.. 74 012	Machinery and equipment rental payments <sup>2</sup> .....	\$.1,000.. 13 676
Cost of fuels .....	\$.1,000.. 7 516	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$.1,000.. 4 950
Cost of purchased electricity .....	\$.1,000.. 20 593	Response coverage ratio <sup>4</sup> .....	percent.. 77
Cost of contract work .....	\$.1,000.. 74 618	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$.1,000.. 22 298
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 322 333	Response coverage ratio <sup>4</sup> .....	percent.. 77
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. -	Cost of purchased communications services <sup>3</sup> .....	\$.1,000.. 7 794
Total value of shipments .....	\$.1,000.. 3 035 073	Response coverage ratio <sup>4</sup> .....	percent.. 77
Primary products value of shipments .....	\$.1,000.. 2 761 857	Cost of purchased legal services <sup>3</sup> .....	\$.1,000.. 3 058
Secondary products value of shipments .....	\$.1,000.. 120 966	Response coverage ratio <sup>4</sup> .....	percent.. 77
Total miscellaneous receipts .....	\$.1,000.. 152 250	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$.1,000.. 3 542
Value of resales .....	\$.1,000.. 98 813	Response coverage ratio <sup>4</sup> .....	percent.. 77
Contract receipts .....	\$.1,000.. 26 451	Cost of purchased advertising services <sup>3</sup> .....	\$.1,000.. 5 666
Other miscellaneous receipts .....	\$.1,000.. 26 986	Response coverage ratio <sup>4</sup> .....	percent.. 77
Primary products specialization ratio .....	percent.. 95	Cost of purchased software and other data processing services <sup>3</sup> .....	\$.1,000.. 2 354
Value of primary products shipments made in all industries .....	\$.1,000.. 3 194 878	Response coverage ratio <sup>4</sup> .....	percent.. 77
Value of primary products shipments made in this industry .....	\$.1,000.. 2 761 857	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$.1,000.. 1 317
Value of primary products shipments made in other industries .....	\$.1,000.. 433 021	Response coverage ratio <sup>4</sup> .....	percent.. 77
Coverage ratio .....	percent.. 86		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332114, CUSTOM ROLL FORMING</b>												
<b>All establishments</b> .....	-	<b>397</b>	<b>199</b>	<b>14 901</b>	<b>490 329</b>	<b>10 540</b>	<b>21 984</b>	<b>293 101</b>	<b>1 242 026</b>	<b>1 830 313</b>	<b>3 035 073</b>	<b>54 843</b>
Establishments with 1 to 4 employees .....	8	48	-	98	3 065	76	141	1 874	7 046	13 221	20 371	435
Establishments with 5 to 9 employees .....	3	57	-	409	13 164	287	527	7 584	28 519	39 921	68 106	1 395
Establishments with 10 to 19 employees .....	1	93	-	1 281	41 199	877	1 715	22 952	97 424	113 271	211 798	6 235
Establishments with 20 to 49 employees .....	-	123	123	3 894	122 832	2 763	5 790	71 528	320 697	510 920	828 586	13 429
Establishments with 50 to 99 employees .....	-	45	45	3 129	103 134	2 257	4 854	61 015	285 267	398 416	678 015	14 404
Establishments with 100 to 249 employees .....	-	24	24	3 913	131 586	2 781	5 830	81 467	309 935	517 013	809 596	12 939
Establishments with 250 to 499 employees .....	-	7	7	2 177	75 349	1 499	3 127	46 681	193 138	237 551	418 601	6 006
Establishments with 500 to 999 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 1,000 to 2,499 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	8	32	-	156	4 641	110	197	2 733	11 413	25 050	36 835	482

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332114</b>	<b>Custom roll forming</b> .....	<b>397</b>	<b>14 901</b>	<b>490 329</b>	<b>10 540</b>	<b>21 984</b>	<b>293 101</b>	<b>1 242 026</b>	<b>1 830 313</b>	<b>3 035 073</b>	<b>54 843</b>

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332114</b>	<b>Custom roll form products</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>3 194 878</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3321140	Custom roll form products .....	N	X	X	3 194 878	N	X	X	N
33211401	Custom carbon steel roll form products .....	N	X	X	2 165 040	N	X	X	N
3321140101	Custom carbon steel roll form products .....	253	X	X	2 165 040	205	X	X	934 375
33211402	Custom stainless steel roll form products .....	N	X	X	215 068	N	X	X	N
3321140206	Custom stainless steel roll form products .....	134	X	X	215 068	111	X	X	171 006
33211403	Custom aluminum roll form products .....	N	X	X	267 644	N	X	X	N
3321140311	Custom aluminum roll form products .....	81	X	X	267 644	70	X	X	272 180
33211404	Other custom metal roll form products .....	N	X	X	224 134	N	X	X	N
3321140416	Other custom metal roll form products .....	67	X	X	224 134	55	X	X	167 568
3321140Y	Custom roll form products, nsk, total .....	N	X	X	322 992	N	X	X	N
3321140YWW	Custom roll form products, nsk, total, for nonadministrative-record establishments .....	N	X	X	287 368	N	X	X	N
3321140YWY	Custom roll form products, nsk, for administrative-record establishments .....	N	X	X	35 624	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332114</b>	<b>CUSTOM ROLL FORMING</b>				
33272203	Metal bolts, nuts, screws, washers, rivets, and other screw machine products .....	X	19 349	X	N
33200095	Other fabricated metal products (except forgings) .....	X	34 684	X	N
33100035	Castings (rough and semifinished) .....	X	9 611	X	N
33210001	Forgings .....	X	5 176	X	N
33120007	Steel bars, bar shapes, and plates (except castings, forgings, and fabricated metal products) .....	X	122 563	X	N
33120009	Steel concrete reinforcing bars .....	X	D	X	N
33120017	Steel sheet and strip, including tin plate .....	X	335 506	X	N
33120069	Steel structural shapes (except castings, forgings, and fabricated metal products) .....	X	74 239	X	N
33120037	All other steel shapes and forms (except castings, forgings, and fabricated metal products) .....	X	574 649	X	N
33142111	Copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	3 769	X	N
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing .....	X	66 291	X	N
33131600	Aluminum and aluminum-base alloy extruded shapes, including extruded rod, bar, pipe, tube, etc. ....	X	5 834	X	N
33100007	All other aluminum and aluminum-base alloy shapes and forms, including refinery shapes (except castings and forgings) .....	X	53 350	X	N
33100083	Other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	32 854	X	N
00190023	Iron and steel scrap, excluding home scrap .....	X	D	X	N
32551003	Paints, varnishes, lacquers, stains, shellacs, japans, enamels, and allied products .....	X	6 818	X	N
00970099	All other materials and components, parts, containers, and supplies .....	X	119 187	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	178 263	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.



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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332114 CUSTOM ROLL FORMING**

This U.S. industry comprises establishments primarily engaged in custom roll forming metal products by use of rotary motion of rolls with various contours to bend or shape the products.

The data published with NAICS code 332114 include the following SIC industry:

3449 Miscellaneous metal work (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.



# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.









1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3329991	34971	34971	332999AYWV	3499500	3499500	332999GYWV pt...	3999900 pt	3999900 pt
3329991101	3497132	3497132	332999G pt	32918 pt	32918 pt	332999W pt	32910 pt	32910 pt
3329991106	3497133	3497133	332999G pt	34323 pt	34323 pt	332999W pt	34320 pt	34320 pt
3329991111	3497137	3497137	332999G pt	34945 pt	34945 pt	332999W pt	34940 pt	34940 pt
3329991YVV	3497100	3497100	332999G pt	34998 pt	34998 pt	332999W pt	34970 pt	34970 pt
3329993	34973	34973	332999G pt	35373 pt	35373 pt	332999W pt	34990 pt	34990 pt
3329993101	3497352	3497352	332999G pt	39999 pt	39999 pt	332999W pt	35370 pt	35370 pt
3329993106	3497354	3497354	332999G101	3499811	3499811	332999W pt	35990 pt	35990 pt
3329993111	3497358	3497358	332999G106	3499819	3499819	332999W pt	39990 pt	39990 pt
3329993YVV	3497300	3497300	332999G189	3494571	3494571	332999WYWWW pt...	3291000 pt	3291000 pt
3329994	35994 pt	35994 pt	332999G301	3499829	3499829	332999WYWWW pt...	3432000 pt	3432000 pt
3329994101	3599411	3599411	332999G303	3499839	3499839	332999WYWWW pt...	3494000 pt	3494000 pt
3329994106	3599413	3599413	332999G305	3537331	3537331	332999WYWWW pt...	3497000 pt	3497000 pt
3329994111	3599415	3599415	332999G306 pt	3999991 pt	3999913 pt	332999WYWWW pt...	3499000 pt	3499000 pt
3329994116	3599416	3599416	332999G306 pt	3999991 pt	3999942 pt	332999WYWWW pt...	3499000 pt	3499000 pt
3329994121	3599425	3599425	332999G306 pt	3999991 pt	3999944 pt	332999WYWWW pt...	3537000 pt	3537000 pt
3329994YVV	3599400 pt	3599400 pt	332999G306 pt	3999991 pt	3999999 pt	332999WYWWW pt...	3599000 pt	3599000 pt
3329997	34992	34992	332999G313	3291831	3291831	332999WYWWW pt...	3999000 pt	3999000 pt
3329997101	3499211	3499211	332999G316	3291835	3291890 pt	332999WYWWW pt...	3291002 pt	3291002 pt
3329997106	3499213	3499213	332999G399 pt	3432329	3432332 pt	332999WYWWW pt...	3432002 pt	3432002 pt
3329997YVV	3499200	3499200	332999G399 pt	3499898	3499899 pt	332999WYWWW pt...	3494002 pt	3494002 pt
3329999	34993	34993	332999GYWV pt...	3291800 pt	3291800 pt	332999WYWWW pt...	3497002 pt	3497002 pt
3329999100	3499300	3499300	332999GYWV pt...	3432300 pt	3432300 pt	332999WYWWW pt...	3499002 pt	3499002 pt
332999A	34995	34995	332999GYWV pt...	3494500 pt	3494500 pt	332999WYWWW pt...	3537002 pt	3537002 pt
332999A101	3499511	3499511	332999GYWV pt...	3499800 pt	3499800 pt	332999WYWWW pt...	3599002 pt	3599002 pt
332999A106	3499521	3499521	332999GYWV pt...	3537300 pt	3537300 pt	332999WYWWW pt...	3999002 pt	3999002 pt
332999A111	3499531	3499531						
332999A116	3499539	3499539						





# Crown and Closure Manufacturing

1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



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The staff of the Administrative and Customer Services Division, **Walter C. Odom**, Chief, performed planning, design, composition, editorial review, and printing planning and procurement for publications, Internet products, and report forms. **Cynthia G. Brooks** provided publication coordination and editing.

# Crown and Closure Manufacturing

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.



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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332115</b>	<b>Crown &amp; closure mfg</b> .....	<b>54</b>	<b>66</b>	<b>4 627</b>	<b>164 065</b>	<b>3 842</b>	<b>8 118</b>	<b>121 092</b>	<b>438 423</b>	<b>501 832</b>	<b>948 720</b>	<b>52 759</b>
346600	Crowns & closures .....	N	66	4 627	164 065	3 842	8 118	121 092	438 423	501 832	948 720	52 759

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332115, CROWN &amp; CLOSURE MFG</b>												
United States .....	-	<b>66</b>	<b>40</b>	<b>4 627</b>	<b>164 065</b>	<b>3 842</b>	<b>8 118</b>	<b>121 092</b>	<b>438 423</b>	<b>501 832</b>	<b>948 720</b>	<b>52 759</b>
California .....	-	9	6	554	15 495	471	780	11 704	26 433	36 246	66 288	7 300
Connecticut .....	-	8	4	527	18 226	447	985	13 265	44 577	54 383	99 062	2 523
Illinois .....	-	8	3	655	22 275	562	1 186	17 905	58 740	59 276	118 208	8 776
Kentucky .....	-	3	2	140	5 692	112	208	4 229	13 947	25 712	39 685	751
Pennsylvania .....	-	6	4	698	26 327	644	1 434	21 771	86 781	70 010	158 295	4 919

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332115, CROWN &amp; CLOSURE MFG</b>		<b>332115, CROWN &amp; CLOSURE MFG—Con.</b>	
Companies <sup>1</sup> .....	number.. 54	Value added .....	\$.1,000.. 438 423
All establishments .....	number.. 66	Total inventories, beginning of year .....	\$.1,000.. 130 843
Establishments with 1 to 19 employees .....	number.. 26	Finished goods inventories, beginning of year .....	\$.1,000.. 59 870
Establishments with 20 to 99 employees .....	number.. 24	Work-in-process inventories, beginning of year .....	\$.1,000.. 26 214
Establishments with 100 employees or more .....	number.. 16	Materials and supplies inventories, beginning of year .....	\$.1,000.. 44 759
All employees .....	number.. 4 627	Total inventories, end of year .....	\$.1,000.. 121 400
Total compensation <sup>2</sup> .....	\$.1,000.. 211 011	Finished goods inventories, end of year .....	\$.1,000.. 60 394
Annual payroll .....	\$.1,000.. 164 065	Work-in-process inventories, end of year .....	\$.1,000.. 17 225
Total fringe benefits .....	\$.1,000.. 46 946	Materials and supplies inventories, end of year .....	\$.1,000.. 43 781
Production workers, average for year .....	number.. 3 842	Gross book value of total assets at beginning of year .....	\$.1,000.. 370 021
Production workers on March 12 .....	number.. 3 831	Total capital expenditures (new and used) .....	\$.1,000.. 52 759
Production workers on May 12 .....	number.. 3 933	Capital expenditures for buildings and other structures	
Production workers on August 12 .....	number.. 3 804	(new and used) .....	\$.1,000.. 4 054
Production workers on November 12 .....	number.. 3 800	Capital expenditures for machinery and equipment (new	
Production-worker hours .....	1,000.. 8 118	and used) .....	\$.1,000.. 48 705
Production-worker wages .....	\$.1,000.. 121 092	Total retirements <sup>2</sup> .....	\$.1,000.. 4 246
Total cost of materials .....	\$.1,000.. 501 832	Gross book value of total assets at end of year .....	\$.1,000.. 418 534
Cost of materials, parts, containers, etc., consumed .....	\$.1,000.. 455 155	Total depreciation during year <sup>2</sup> .....	\$.1,000.. 24 733
Cost of resales .....	\$.1,000.. 12 133	Total rental payments <sup>2</sup> .....	\$.1,000.. 6 569
Cost of fuels .....	\$.1,000.. 9 102	Buildings and other structures rental payments <sup>2</sup> .....	\$.1,000.. 3 622
Cost of purchased electricity .....	\$.1,000.. 11 769	Machinery and equipment rental payments <sup>2</sup> .....	\$.1,000.. 2 947
Cost of contract work .....	\$.1,000.. 13 673	Cost of purchased services for the repair of buildings and other	
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 210 344	structures <sup>3</sup> .....	\$.1,000.. 1 640
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. -	Response coverage ratio <sup>4</sup> .....	percent.. 91
Total value of shipments .....	\$.1,000.. 948 720	Cost of purchased services for the repair of machinery and	
Primary products value of shipments .....	\$.1,000.. 876 217	equipment <sup>3</sup> .....	\$.1,000.. 10 375
Secondary products value of shipments .....	\$.1,000.. 54 200	Response coverage ratio <sup>4</sup> .....	percent.. 91
Total miscellaneous receipts .....	\$.1,000.. 18 303	Cost of purchased communications services <sup>3</sup> .....	\$.1,000.. 1 007
Value of resales .....	\$.1,000.. 10 422	Response coverage ratio <sup>4</sup> .....	percent.. 91
Contract receipts .....	\$.1,000.. D	Cost of purchased legal services <sup>3</sup> .....	\$.1,000.. 127
Other miscellaneous receipts .....	\$.1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 91
Primary products specialization ratio .....	percent.. 94	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$.1,000.. 241
Value of primary products shipments made in all industries .....	\$.1,000.. 951 279	Response coverage ratio <sup>4</sup> .....	percent.. 91
Value of primary products shipments made in this industry .....	\$.1,000.. 876 217	Cost of purchased advertising services <sup>3</sup> .....	\$.1,000.. 710
Value of primary products shipments made in other		Response coverage ratio <sup>4</sup> .....	percent.. 91
industries .....	\$.1,000.. 75 062	Cost of purchased software and other data processing	
Coverage ratio .....	percent.. 92	services <sup>3</sup> .....	\$.1,000.. 340
		Response coverage ratio <sup>4</sup> .....	percent.. 91
		Cost of purchased refuse removal (including hazardous waste)	
		services <sup>3</sup> .....	\$.1,000.. 1 336
		Response coverage ratio <sup>4</sup> .....	percent.. 91

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332115, CROWN &amp; CLOSURE MFG</b>												
<b>All establishments .....</b>	-	<b>66</b>	<b>40</b>	<b>4 627</b>	<b>164 065</b>	<b>3 842</b>	<b>8 118</b>	<b>121 092</b>	<b>438 423</b>	<b>501 832</b>	<b>948 720</b>	<b>52 759</b>
Establishments with 1 to 4 employees .....	4	11	-	20	616	16	31	418	1 644	5 653	7 781	195
Establishments with 5 to 9 employees .....	7	8	-	61	1 736	52	99	1 319	5 297	6 953	12 192	548
Establishments with 10 to 19 employees .....	4	7	-	106	3 564	86	184	2 909	8 328	10 320	18 813	898
Establishments with 20 to 49 employees .....	1	12	12	347	9 663	238	435	5 455	19 566	18 291	37 681	1 299
Establishments with 50 to 99 employees .....	-	12	12	830	27 275	668	1 310	20 251	80 225	105 934	186 945	3 550
Establishments with 100 to 249 employees .....	-	14	14	2 425	90 929	1 991	4 355	64 871	238 404	270 541	515 138	36 775
Establishments with 250 to 499 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	17	-	75	1 988	63	115	1 529	5 852	7 437	13 164	764

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332115</b>	<b>Crown &amp; closure mfg .....</b>	<b>66</b>	<b>4 627</b>	<b>164 065</b>	<b>3 842</b>	<b>8 118</b>	<b>121 092</b>	<b>438 423</b>	<b>501 832</b>	<b>948 720</b>	<b>52 759</b>

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332115</b>	<b>Crowns and closures</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>951 279</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>810 981</b>
3321150	Metal commercial closures and metal home-canning closures, except crowns	N	X	X	951 279	N	X	X	N
33211501	Metal commercial closures and metal home-canning closures, except crowns, nsk	N	X	X	921 361	N	X	X	N
3321150101	Metal and metal-composite closures, including home-canning closures	40	X	X	755 353	34	X	X	635 511
3321150103	Metal crowns (including soft drinks, beer, and all other)	4	X	X	D	N	X	X	N
3321150106	All other metal closures, including beer and roll-ons	6	X	X	D	N	X	X	N
3321150Y	Metal commercial closures and metal home-canning closures, except crowns, nsk	N	X	X	29 918	N	X	X	N
3321150YWW	Crowns and closures, nsk, for nonadministrative-record establishments	N	X	X	18 014	N	X	X	N
3321150YWY	Crowns and closures, nsk, for administrative-record establishments	N	X	X	11 904	N	X	X	4 830

# Additional information is available for this item: see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332115</b>	<b>CROWN &amp; CLOSURE MFG</b>				
33272203	Metal bolts, nuts, screws, washers, rivets, and other screw machine products	X	2 542	X	797
33200095	Other fabricated metal products (except forgings)	X	12 838	X	D
33151001	Iron and steel castings (rough and semifinished)	X	874	X	D
33152011	Nonferrous (aluminum, copper, etc.) castings (rough and semifinished)	X	D	X	D
33210001	Forgings	X	D	X	N
33120071	Steel bars and bar shapes (except castings, forgings, and fabricated metal products)	X	2 938	X	D
33120017	Steel sheet and strip, including tin plate, 1,000 s tons	S	46 150	S	1 904
33120079	Steel plate	X	D	X	N
33120025	Steel wire and wire products	X	D	X	N
33120013	Steel tinplate, tin free steel, terneplate, and blackplate, 1,000 s tons	S	158 252	S	209 628
33120027	All other steel shapes and forms (except castings, forgings, and fabricated metal products)	X	D	X	D
33142111	Copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products)	X	D	X	N
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing	X	21 081	X	47 114
33131600	Aluminum and aluminum-base alloy extruded shapes, including extruded rod, bar, pipe, tube, etc.	X	39	X	D
33100049	Other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products)	X	23 769	X	13 966
33100083	Other nonferrous shapes and forms (except castings, forgings, and fabricated metal products)	X	D	X	N
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc.	X	34 278	X	23 121
32551003	Paints, varnishes, lacquers, stains, shellacs, japans, enamels, and allied products	X	28 793	X	28 175
32500051	All other chemicals and allied products	X	D	X	14 732
32610013	Plastics products consumed in the form of sheets, rods, tubes, film, and other shapes	X	997	X	D

See footnotes at end of table.



**Table 7. Materials Consumed by Kind: 1997 and 1992—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332115</b>	<b>CROWN &amp; CLOSURE MFG—Con.</b>				
32221001	Paperboard containers, boxes, and corrugated paperboard .....	X	9 865	X	9 964
32200007	Other paper and paperboard products .....	X	6 353	X	4 681
33510000	Special dies, tools, die sets, jigs, and fixtures, except cutting tools for machine tools .....	X	1 623	X	D
00970099	All other materials and components, parts, containers, and supplies .....	X	15 872	X	31 852
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	41 638	X	10 135

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332115 CROWN AND CLOSURE MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in stamping metal crowns and closures, such as bottle caps and home canning lids and rings.

The data published with NAICS code 332115 include the following SIC industry:

3466 Crowns and closures



# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.



# Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.

# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33211111	34625	34625	3321165281	3469989	3469989	3322127 pt.	37999 pt.	37999 pt.
3321111101	3462511	3462511	3321165291	3469997	3469997	3322127101	3423611	3423611
332111206	3462513	3462513	3321165361	3469971	3469971	3322127111	3423621	3423621
332111311	3462515	3462515	3321165YVW	3469900	3469900	3322127116	3423631	3423631
332111416	3462517	3462517	3321166W	34690 pt.	34690 pt.	3322127121	3423641	3423641
332111YVW	3462500	3462500	3321166WYVW	3469000 pt.	3469000 pt.	3322127131	3423681	3423681
3321113	34626	34626	3321166YVW	3469002 pt.	3469002 pt.	3322127136	3423685	3423685
3321113101	3462611	3462611	3321170 pt.	34990 pt.	34990 pt.	3322127141	3799906	3799923 pt.
3321113106	3462613	3462613	3321170 pt.	34990 pt.	34990 pt.	3322127199	3423698	3423698
3321113111	3462616	3462616	3321170 pt.	34990 pt.	34990 pt.	3322127226	3524101	3524100 pt.
3321113YVW	3462600	3462600	3321170 pt.	34996	34996	3322127YVW pt.	3423600	3423600
3321115	34627	34627	3321170106	3499633	3499633	3322127YVW pt.	3524100 pt.	3524100 pt.
3321115101	3462712	3462712	3321170211	3499655	3499655	3322127YVW pt.	3799900 pt.	3799900 pt.
3321115106	3462716	3462716	3321170321	3499677	3499677	3322129 pt.	35455	35455
3321115YVW	3462700	3462700	3321170401	3499611	3499611	3322129 pt.	35455	35455
3321117	34628	34628	3321170416	3499666	3499666	3322129 pt.	36992 pt.	36992 pt.
3321117101	3462812	3462812	3321170426	3499688	3499688	3322129101	3545511	3545511
3321117106	3462816	3462816	3321170YVW pt.	3499000 pt.	3499000 pt.	3322129106	3545513	3545513
3321117YVW	3462800	3462800	3321170YVW pt.	3499600	3499600	3322129111	3545515	3545515
332111W	34620	34620	3321170YVW	3499002 pt.	3499002 pt.	3322129116	3545517	3545517
332111WYVW	3462000	3462000	3322111 pt.	39141 pt.	39141 pt.	3322129121	3545521	3545521
332111YVW	3462002	3462002	3322111 pt.	39142 pt.	39142 pt.	3322129126	3545561	3545561
3321121	34635	34635	332211101	3421111	3421111	3322129131	3545565	3545565
3321121101	3463521	3463521	3322111103	3914245	3914245	3322129146	3545577	3545577
3321121206	3463523	3463523	3322111106	3914155	3914170 pt.	3322129161	3699255	3699200 pt.
3321121311	3463525	3463525	3322112111	3421125	3421125	3322129236	3545571	3545571
3321121316	3463529	3463529	332211222	3421130	3421130	3322129341	3545573	3545573
3321121YVW	3463500	3463500	332211326	3421153	3421153	3322129451	3545579	3545579
3321122	34639	34639	332211331	3421155	3421155	3322129YVW pt.	3545500	3545500
3321122101	3463915	3463915	332211336	3421157	3421157	3322129YVW pt.	3699200 pt.	3699200 pt.
3321122106	3463925	3463925	332211344	3421159	3421159	3322129YVW pt.	34230	34230
3321122111	3463935	3463935	332211355	3421180	3421180	332212W pt.	35230 pt.	35230 pt.
3321122YVW	3463900	3463900	332211372	3421100	3421100	332212W pt.	35240 pt.	35240 pt.
332112W	34630	34630	332211377	3421100 pt.	3914200 pt.	332212W pt.	35450 pt.	35450 pt.
332112WYVW	3463000	3463000	3322113	34212	34212	332212W pt.	36990 pt.	36990 pt.
332112YVW	3463002	3463002	3322113101	3421205	3421205	332212W pt.	37990 pt.	37990 pt.
3321140 pt.	34490 pt.	34490 pt.	3322113106	3421210	3421210	332212W pt.	39990 pt.	39990 pt.
3321140 pt.	34498	34498	3322113111	3421216	3421216	332212WYVW pt.	3423000	3423000
3321140101	3449811	3449811	3322113YVW	3421200	3421200	332212WYVW pt.	3523000 pt.	3523000 pt.
3321140206	3449813	3449813	332211W pt.	34210	34210	332212WYVW pt.	3524000 pt.	3524000 pt.
3321140311	3449815	3449815	332211W pt.	39140 pt.	39140 pt.	332212WYVW pt.	3545000 pt.	3545000 pt.
3321140416	3449817	3449817	332211WYVW pt.	3421000	3421000	332212WYVW pt.	3699000 pt.	3699000 pt.
3321140YVW pt.	3449000 pt.	3449000 pt.	332211WYVW pt.	3914000 pt.	3914000 pt.	332212WYVW pt.	3799000 pt.	3799000 pt.
3321140YVW pt.	3449800	3449800	332211WYVW pt.	3421002	3421002	332212WYVW pt.	3999000 pt.	3999000 pt.
3321140YVW	3449002 pt.	3449002 pt.	332211WYVW pt.	3914002 pt.	3914002 pt.	332212WYVW pt.	3423002	3423002
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3321150 pt.	34661	34661	3322121 pt.	39999 pt.	39999 pt.	332212WYVW pt.	3524002 pt.	3524002 pt.
3321150101	3466105	3466105	3322121101	3423112	3423112	332212WYVW pt.	3545002 pt.	3545002 pt.
3321150103 pt.	3466200 pt.	3466200	3322121206	3423113	3423113	332212WYVW pt.	3699002 pt.	3699002 pt.
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3321150103 pt.	3466200 pt.	3466232	3322121351	3423141	3423141	332212WYVW pt.	3999002 pt.	3999002 pt.
3321150106 pt.	3466123 pt.	3466120	3322121356	3423151	3423151	3322130	34250	34250
3321150106 pt.	3466123 pt.	3466122	3322121361	3423155	3423155	3322130101	3425011	3425011
3321150YVW pt.	3466000	3466000	3322121365	3999971	3999971	3322130106	3425013	3425013
3321150YVW pt.	3466100	3466100	3322121399	3423197	3423197	3322130111	3425016	3425016
3321150YVW	3466002	3466002	3322121416	3423131	3423131	3322130116	3425018	3425018
3321161	34692	34692	3322121421	3423133	3423133	3322130122	3425019	3425019
3321161101	3469201	3469201	3322121426	3423136	3423136	3322130226	3425031	3425031
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3321161205	3469205	3469205	3322121436	3423138	3423138	3322130244	3425036	3425036
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3321161331	3469231	3469231	3322121YVW pt.	3423100	3423100	3322130361	3425041	3425041
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3321161354	3469253	3469253	3322123 pt.	34234	34234	3322130377	3425045	3425045
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3321161421	3469220	3469220	3322123106	3423433	3423433	3322141	34694	34694
3321161441	3469241	3469241	3322123111	3423444	3423444	3322141111	3469411	3469411
3321161525	3469225	3469225	3322123121	3423498	3423498	3322141221	3469414	3469414
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3321163	34696	34696	3322125101	3423511	3423511	3322143101	3469507	3469507
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3321165101	3469941	3469941	3322125316	3423522	3423522	3322143231 pt.	3469525 pt.	3469521
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3321165241	3469961	3469961	3322127 pt.	34236	34236	3322143YVW	3469500	3469500
3321165251	3469969	3469969	3322127 pt.	35241 pt.	35241 pt.	332214W	34690 pt.	34690 pt.
3321165271	3469985	3469985	3322127 pt.	35241 pt.	35241 pt.	332214WYVW	3469000 pt.	3469000 pt.
						332214WYVW	3469002 pt.	3469002 pt.







1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3329991	34971	34971	332999AYWV	3499500	3499500	332999GYWV pt...	3999900 pt	3999900 pt
3329991101	3497132	3497132	332999G pt	32918 pt	32918 pt	332999W pt	32910 pt	32910 pt
3329991106	3497133	3497133	332999G pt	34323 pt	34323 pt	332999W pt	34320 pt	34320 pt
3329991111	3497137	3497137	332999G pt	34945 pt	34945 pt	332999W pt	34940 pt	34940 pt
3329991YVV	3497100	3497100	332999G pt	34998 pt	34998 pt	332999W pt	34970 pt	34970 pt
3329993	34973	34973	332999G pt	34998 pt	34998 pt	332999W pt	34990 pt	34990 pt
3329993101	3497352	3497352	332999G pt	35373 pt	35373 pt	332999W pt	34990 pt	34990 pt
3329993106	3497354	3497354	332999G pt	39999 pt	39999 pt	332999W pt	35370 pt	35370 pt
3329993111	3497358	3497358	332999G101	3499811	3499811	332999W pt	35990 pt	35990 pt
3329993YVV	3497300	3497300	332999G106	3499819	3499819	332999W pt	39990 pt	39990 pt
3329994	35994 pt	35994 pt	332999G189	3494571	3494571	332999W pt	3291000 pt	3291000 pt
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3329994111	3599415	3599415	332999G305	3537331	3537331	332999WYVVV pt...	3497000 pt	3497000 pt
3329994116	3599416	3599416	332999G306 pt	3999991 pt	3999913 pt	332999WYVVV pt...	3499000 pt	3499000 pt
3329994121	3599425	3599425	332999G306 pt	3999991 pt	3999944 pt	332999WYVVV pt...	3537000 pt	3537000 pt
3329994YVV	3599400 pt	3599400 pt	332999G306 pt	3999991 pt	3999999 pt	332999WYVVV pt...	3599000 pt	3599000 pt
3329997	34992	34992	332999G313	3291831	3291831	332999WYVVV pt...	3999000 pt	3999000 pt
3329997101	3499211	3499211	332999G316	3291835	3291890 pt	332999WYVVV pt...	3291002 pt	3291002 pt
3329997106	3499213	3499213	332999G399 pt	3432329	3432332 pt	332999WYVVV pt...	3432002 pt	3432002 pt
3329997YVV	3499200	3499200	332999G399 pt	3499898	3499899 pt	332999WYVVV pt...	3494002 pt	3494002 pt
3329999	34993	34993	332999GYWV pt	3291800 pt	3291800 pt	332999WYVVV pt...	3497002 pt	3497002 pt
3329999100	3499300	3499300	332999GYWV pt	3432300 pt	3432300 pt	332999WYVVV pt...	3499002 pt	3499002 pt
332999A	34995	34995	332999GYWV pt	3494500 pt	3494500 pt	332999WYVVV pt...	3537002 pt	3537002 pt
332999A101	3499511	3499511	332999GYWV pt	3499800 pt	3499800 pt	332999WYVVV pt...	3599002 pt	3599002 pt
332999A106	3499521	3499521	332999GYWV pt	3537300 pt	3537300 pt	332999WYVVV pt...	3999002 pt	3999002 pt
332999A111	3499531	3499531						
332999A116	3499539	3499539						



# Metal Stamping

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



# U S C E N S U S B U R E A U

*Helping You Make Informed Decisions*

U.S. Department of Commerce  
Economics and Statistics Administration  
U.S. CENSUS BUREAU





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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director

---



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufac-ture (\$1,000)	Cost of materials (\$1,000)	Value of ship-ments (\$1,000)	Total capital ex-pen-di-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332116</b>	<b>Metal stamping</b> .....	<b>2 049</b>	<b>2 161</b>	<b>92 694</b>	<b>3 025 168</b>	<b>71 523</b>	<b>148 404</b>	<b>1 947 157</b>	<b>6 433 548</b>	<b>5 590 538</b>	<b>11 990 235</b>	<b>505 214</b>
346910	Metal stampings, n.e.c. (pt) ....	N	2 161	92 694	3 025 168	71 523	148 404	1 947 157	6 433 548	5 590 538	11 990 235	505 214

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufac-ture (\$1,000)	Cost of materials (\$1,000)	Value of ship-ments (\$1,000)	Total capital ex-pen-di-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332116, METAL STAMPING</b>												
<b>United States</b> .....	<b>1</b>	<b>2 161</b>	<b>1 087</b>	<b>92 694</b>	<b>3 025 168</b>	<b>71 523</b>	<b>148 404</b>	<b>1 947 157</b>	<b>6 433 548</b>	<b>5 590 538</b>	<b>11 990 235</b>	<b>505 214</b>
Alabama .....	-	19	7	451	12 750	387	767	9 564	26 049	23 083	49 293	3 377
Arizona .....	2	21	10	625	23 000	485	1 003	14 532	55 250	37 443	92 000	4 347
Arkansas .....	-	8	2	715	21 034	629	1 320	17 696	61 007	49 583	109 808	3 181
California .....	1	264	115	7 718	258 092	5 943	12 999	164 036	572 489	458 108	1 028 573	44 236
Colorado .....	4	17	8	899	32 375	622	1 232	16 624	74 462	39 720	114 446	4 327
Connecticut .....	-	112	56	4 743	183 710	3 742	8 340	125 756	369 315	307 338	672 173	23 438
Florida .....	1	46	18	2 044	56 898	1 465	3 175	32 437	131 897	97 054	227 112	9 462
Georgia .....	-	29	15	1 231	37 681	1 005	1 979	24 684	85 653	69 707	156 637	3 459
Illinois .....	-	261	142	13 669	489 600	10 817	23 273	322 377	1 099 676	1 089 605	2 178 141	79 829
Indiana .....	1	71	38	2 840	76 171	2 196	4 272	52 129	181 454	167 140	346 276	19 007
Iowa .....	-	12	7	917	32 232	659	1 202	18 407	52 229	41 592	93 746	1 922
Kentucky .....	-	25	17	1 955	50 869	1 612	3 212	36 250	101 606	125 351	227 010	9 988
Louisiana .....	-	6	3	192	5 315	148	344	3 137	15 605	15 354	29 988	395
Massachusetts .....	-	77	37	2 769	94 281	2 161	4 382	59 723	199 454	124 554	320 953	10 474
Michigan .....	1	124	55	4 481	140 767	3 369	6 535	87 923	274 384	262 900	541 442	24 370
Minnesota .....	2	83	51	7 875	265 006	6 156	12 720	175 262	497 318	420 947	922 830	44 077
Mississippi .....	1	14	8	741	16 250	568	1 128	10 654	42 382	37 834	80 049	2 235
Missouri .....	-	39	17	1 580	52 455	1 234	2 569	37 825	119 204	94 253	214 946	10 393
New Hampshire .....	-	13	5	304	8 889	224	438	5 223	15 364	11 023	26 187	573
New Jersey .....	1	101	41	3 211	123 694	2 431	5 010	74 729	227 557	154 895	379 131	11 299
New York .....	1	122	52	3 464	112 703	2 623	5 387	68 856	218 461	160 721	377 449	11 817
North Carolina .....	-	26	15	1 005	32 738	785	1 671	21 982	62 180	53 940	115 019	6 613
Ohio .....	-	187	107	8 437	270 079	6 451	13 330	171 929	582 736	558 907	1 142 079	45 545
Oklahoma .....	-	16	9	777	20 172	554	1 082	13 006	58 025	40 759	95 509	8 155
Oregon .....	3	17	9	552	19 351	403	761	10 356	36 881	31 230	68 060	8 308
Pennsylvania .....	1	83	51	4 821	154 748	3 695	7 623	93 975	325 049	282 521	607 209	33 486
Rhode Island .....	-	39	16	912	31 605	688	1 471	19 489	75 740	62 233	138 055	6 595
South Carolina .....	2	13	6	345	9 389	222	462	6 093	17 529	13 609	31 017	1 025
Tennessee .....	-	37	21	1 876	47 123	1 498	3 209	32 915	99 205	97 951	196 300	6 904
Texas .....	1	85	46	3 164	81 982	2 535	4 887	53 012	196 769	172 819	367 216	17 414
Washington .....	-	12	7	527	16 463	410	771	10 337	33 832	27 314	60 826	2 246
Wisconsin .....	-	109	68	5 906	189 754	4 493	9 229	122 752	405 830	352 628	754 720	40 084

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332116, METAL STAMPING</b>		<b>332116, METAL STAMPING—Con.</b>	
Companies <sup>1</sup> .....	number.. 2 049	Value added .....	\$.1,000.. 6 433 548
All establishments .....	number.. 2 161	Total inventories, beginning of year .....	\$.1,000.. 1 252 564
Establishments with 1 to 19 employees .....	number.. 1 074	Finished goods inventories, beginning of year .....	\$.1,000.. 428 203
Establishments with 20 to 99 employees .....	number.. 864	Work-in-process inventories, beginning of year .....	\$.1,000.. 315 775
Establishments with 100 employees or more .....	number.. 223	Materials and supplies inventories, beginning of year .....	\$.1,000.. 508 586
All employees .....	number.. 92 694	Total inventories, end of year .....	\$.1,000.. 1 307 176
Total compensation <sup>2</sup> .....	\$.1,000.. 3 714 536	Finished goods inventories, end of year .....	\$.1,000.. 443 615
Annual payroll .....	\$.1,000.. 3 025 168	Work-in-process inventories, end of year .....	\$.1,000.. 334 214
Total fringe benefits .....	\$.1,000.. 689 368	Materials and supplies inventories, end of year .....	\$.1,000.. 529 347
Production workers, average for year .....	number.. 71 523	Gross book value of total assets at beginning of year .....	\$.1,000.. 4 291 015
Production workers on March 12 .....	number.. 70 462	Total capital expenditures (new and used) .....	\$.1,000.. 505 214
Production workers on May 12 .....	number.. 71 018	Capital expenditures for buildings and other structures (new and used) .....	\$.1,000.. 77 372
Production workers on August 12 .....	number.. 71 950	Capital expenditures for machinery and equipment (new and used) .....	\$.1,000.. 427 842
Production workers on November 12 .....	number.. 72 662	Total retirements <sup>2</sup> .....	\$.1,000.. 78 233
Production-worker hours .....	1,000.. 148 404	Gross book value of total assets at end of year .....	\$.1,000.. 4 717 996
Production-worker wages .....	\$.1,000.. 1 947 157	Total depreciation during year <sup>2</sup> .....	\$.1,000.. 306 731
Total cost of materials .....	\$.1,000.. 5 590 538	Total rental payments <sup>2</sup> .....	\$.1,000.. 192 771
Cost of materials, parts, containers, etc., consumed .....	\$.1,000.. 4 691 177	Buildings and other structures rental payments <sup>2</sup> .....	\$.1,000.. 109 466
Cost of resales .....	\$.1,000.. 219 505	Machinery and equipment rental payments <sup>2</sup> .....	\$.1,000.. 83 303
Cost of fuels .....	\$.1,000.. 46 980	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$.1,000.. 26 497
Cost of purchased electricity .....	\$.1,000.. 113 768	Response coverage ratio <sup>4</sup> .....	percent.. 80
Cost of contract work .....	\$.1,000.. 519 108	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$.1,000.. 76 388
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 1 742 140	Response coverage ratio <sup>4</sup> .....	percent.. 80
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. -	Cost of purchased communications services <sup>3</sup> .....	\$.1,000.. 25 999
Total value of shipments .....	\$.1,000.. 11 990 235	Response coverage ratio <sup>4</sup> .....	percent.. 80
Primary products value of shipments .....	\$.1,000.. 10 448 977	Cost of purchased legal services <sup>3</sup> .....	\$.1,000.. 20 463
Secondary products value of shipments .....	\$.1,000.. 1 064 817	Response coverage ratio <sup>4</sup> .....	percent.. 80
Total miscellaneous receipts .....	\$.1,000.. 476 441	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$.1,000.. 23 678
Value of resales .....	\$.1,000.. 318 132	Response coverage ratio <sup>4</sup> .....	percent.. 80
Contract receipts .....	\$.1,000.. D	Cost of purchased advertising services <sup>3</sup> .....	\$.1,000.. 35 082
Other miscellaneous receipts .....	\$.1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 80
Primary products specialization ratio .....	percent.. 90	Cost of purchased software and other data processing services <sup>3</sup> .....	\$.1,000.. 16 022
Value of primary products shipments made in all industries .....	\$.1,000.. 11 584 148	Response coverage ratio <sup>4</sup> .....	percent.. 80
Value of primary products shipments made in this industry .....	\$.1,000.. 10 448 977	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$.1,000.. 10 056
Value of primary products shipments made in other industries .....	\$.1,000.. 1 135 171	Response coverage ratio <sup>4</sup> .....	percent.. 80
Coverage ratio .....	percent.. 90		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332116, METAL STAMPING</b>												
<b>All establishments</b> .....	<b>1</b>	<b>2 161</b>	<b>1 087</b>	<b>92 694</b>	<b>3 025 168</b>	<b>71 523</b>	<b>148 404</b>	<b>1 947 157</b>	<b>6 433 548</b>	<b>5 590 538</b>	<b>11 990 235</b>	<b>505 214</b>
Establishments with 1 to 4 employees .....	7	375	—	814	23 943	653	1 129	16 087	55 950	45 394	101 546	4 441
Establishments with 5 to 9 employees .....	4	308	—	2 123	65 701	1 540	2 801	41 590	138 322	97 447	235 935	8 986
Establishments with 10 to 19 employees .....	1	391	—	5 428	172 842	3 997	7 709	105 161	373 127	259 057	629 123	26 960
Establishments with 20 to 49 employees .....	1	551	551	17 530	585 303	13 291	27 308	356 083	1 253 445	899 461	2 143 140	97 387
Establishments with 50 to 99 employees .....	1	313	313	22 008	728 082	16 818	35 523	458 858	1 516 580	1 258 826	2 762 623	122 352
Establishments with 100 to 249 employees .....	—	182	182	26 971	892 592	21 031	44 406	575 169	1 791 869	1 860 691	3 635 400	139 175
Establishments with 250 to 499 employees .....	—	33	33	11 327	341 002	8 791	17 905	228 794	811 492	666 717	1 471 041	73 603
Establishments with 500 to 999 employees .....	—	6	6	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	5	2	2	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records <sup>2</sup> .....	9	445	—	2 018	49 400	1 524	2 424	32 840	99 285	86 911	186 200	7 357

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332116</b>	<b>Metal stamping</b> .....	<b>2 161</b>	<b>92 694</b>	<b>3 025 168</b>	<b>71 523</b>	<b>148 404</b>	<b>1 947 157</b>	<b>6 433 548</b>	<b>5 590 538</b>	<b>11 990 235</b>	<b>505 214</b>
3321161	Metal job stampings, except automotive .....	1 089	62 084	2 078 299	48 272	102 459	1 350 765	4 365 859	3 827 107	8 167 459	330 308
3321163	Metal spinning products, excluding cooking and kitchen utensils .....	53	1 529	52 896	1 259	2 506	34 763	113 298	50 778	162 315	7 844
3321165	Other stamped and pressed metal end products, including vitreous enameled products .....	298	22 538	714 372	16 991	34 345	445 296	1 583 530	1 418 725	2 997 181	135 505

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332116</b>	<b>Metal stampings, nec</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>11 584 148</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3321161	Metal job stampings, except automotive .....	N	X	X	7 929 989	N	X	X	5 076 881
33211611	Recreational vehicle metal job stampings (motor homes, travel trailers, etc.) .....	N	X	X	583 437	N	X	X	N
3321161101	Recreational vehicle metal job stampings (motor homes, travel trailers, etc.) .....	78	X	X	145 593	71	X	X	99 955
3321161115	Agricultural equipment metal job stampings, including tractor .....	111	X	X	437 844	102	X	X	176 357
33211612	Motor and generator metal job stampings .....	N	X	X	766 292	N	X	X	N
3321161205	Motor and generator metal job stampings .....	147	X	X	766 292	117	X	X	445 025
33211613	Other metal job stampings .....	N	X	X	3 975 747	N	X	X	N
3321161311	Aviation metal job stampings .....	100	X	X	218 440	101	X	X	165 930
3321161331	Furniture metal job stampings .....	118	X	X	230 081	94	X	X	196 221
3321161352	Radio and phonograph metal job stampings, except automotive .....	21	X	X	31 264	22	X	X	34 642
3321161354	Television metal job stampings .....	49	X	X	202 130	31	X	X	115 322
3321161388	Other industrial equipment metal job stampings .....	364	X	X	834 582	311	X	X	471 003
3321161398	Other metal job stampings, except automotive .....	689	X	X	2 459 250	684	X	X	1 561 802
33211614	Computer and office machine metal job stampings .....	N	X	X	1 307 662	N	X	X	N
3321161421	Computer metal job stampings .....	176	X	X	1 145 250	190	X	X	548 990
3321161441	Office machine metal job stampings, excluding computer .....	64	X	X	162 412	73	X	X	166 435
33211615	Electrical appliance metal job stampings, residential, commercial, and industrial .....	N	X	X	865 460	N	X	X	N
3321161525	Electrical appliance metal job stampings, except refrigeration and laundry equipment .....	187	X	X	326 269	190	X	X	274 128
3321161561	Refrigeration metal job stampings (residential, commercial, and industrial) .....	67	X	X	256 638	75	X	X	261 043
3321161571	Stove, heater, and air-conditioner metal job stampings (residential, commercial, and industrial), except automotive .....	104	X	X	221 356	102	X	X	189 831
3321161584	Laundry equipment metal job stampings (residential, commercial, and industrial) .....	36	X	X	61 197	44	X	X	61 484
3321161Y	Job stampings, except automotive, nsk .....	N	X	X	431 391	N	X	X	N
3321161YWV	Job stampings, except automotive, nsk .....	N	X	X	431 391	N	X	X	308 713
3321163	Metal spinning products, excluding cooking and kitchen utensils .....	N	X	X	163 997	N	X	X	109 478
33211631	Metal spinning products, excluding cooking and kitchen utensils .....	N	X	X	163 997	N	X	X	N
3321163100	Metal spinning products, excluding cooking and kitchen utensils .....	68	X	X	163 997	71	X	X	109 478
3321165	Other stamped and pressed metal end products, including vitreous enameled products .....	N	X	X	2 880 251	N	X	X	1 856 636
33211651	Stamped and pressed vitreous (porcelain) enameled metal architectural parts (exterior and interior), including store front and curtain wall components .....	N	X	X	30 883	N	X	X	N
3321165101	Stamped and pressed vitreous (porcelain) enameled metal architectural parts (exterior and interior), including store front and curtain wall components .....	18	X	X	30 883	11	X	X	24 315
33211652	Stamped and pressed metal end products, excluding spinning products and metal electric enclosures .....	N	X	X	2 030 479	N	X	X	N
3321165211	Other stamped and pressed vitreous (porcelain) enameled products (including refrigerator and laundry equipment parts and commercial and hospital utensils), except cooking and kitchen utensils .....	12	X	X	55 241	15	X	X	46 084
3321165221	Stamped and pressed metal chemical milling products, milled contoured metal, and clad and bonded metal products .....	11	X	X	68 273	14	X	X	20 168
3321165231	Perforated metal end products .....	37	X	X	204 032	37	X	X	201 844
3321165241	Stamped and pressed galvanized steel pails, ash cans, garbage cans, tubs, etc., excluding shipping containers .....	11	X	X	21 833	14	X	X	41 329
3321165251	Other stamped and pressed metal pails, ash cans, garbage cans, tubs, etc., excluding shipping containers (including other grades of steel) .....	15	X	X	57 148	16	X	X	46 980

See footnotes at end of table.

**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332116</b>	<b>Metal stampings, nec—Con.</b>								
3321165	Other stamped and pressed metal end products, including vitreous enameled products—Con.								
33211652	Stamped and pressed metal end products, excluding spinning products and metal electric enclosures—Con.								
3321165271	Stamped and pressed metal mailboxes (commercial and multiple unit residential) .....	19	X	X	85 333	14	X	X	61 803
3321165281	Stamped and pressed metal toolboxes .....	36	X	X	451 002	34	X	X	337 551
3321165291	Other stamped and pressed metal end products, excluding spinning products .....	248	X	X	1 087 617	219	X	X	646 695
33211653	Metal electronic enclosures (stamped and-or pressed), excluding computer stampings .....	N	X	X	808 864	N	X	X	N
3321165361	Metal electronic enclosures (stamped and-or pressed), excluding computer stampings .....	128	X	X	808 864	125	X	X	381 399
3321165Y	Other stamped and pressed metal end products, including vitreous enameled products, nsk .....	N	X	X	10 025	N	X	X	N
3321165YVW	Other stamped and pressed metal end products, including vitreous enameled products, nsk .....	N	X	X	10 025	N	X	X	48 468
332116W	Metal stampings, nec, nsk, total .....	N	X	X	609 911	N	X	X	N
332116WY	Metal stampings, nec, nsk, total .....	N	X	X	609 911	N	X	X	N
332116WYWW	Metal stampings, nec, nsk, for nonadministrative-record establishments .....	N	X	X	432 960	N	X	X	N
332116WYWY	Metal stampings, nec, nsk, for administrative-record establishments .....	N	X	X	176 951	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
		<b>3321161</b>	<b>METAL JOB STAMPINGS, EXCEPT AUTOMOTIVE</b>
	<b>United States .....</b>	<b>7 929 989</b>	<b>5 076 881</b>
	Alabama .....	42 779	53 427
	Arizona .....	51 584	33 877
	California .....	633 015	359 179
	Colorado .....	74 311	42 629
	Connecticut .....	449 039	316 683
	Florida .....	120 810	43 891
	Georgia .....	75 074	51 169
	Illinois .....	1 548 663	946 958
	Indiana .....	291 946	166 449
	Iowa .....	24 351	16 571
	Kansas .....	9 644	6 330
	Kentucky .....	248 622	174 900
	Maryland .....	34 542	10 858
	Massachusetts .....	265 932	135 767
	Michigan .....	379 419	271 384
	Minnesota .....	583 558	284 402
	Mississippi .....	29 607	19 790
	Missouri .....	89 584	60 288
	New Hampshire .....	27 281	15 712
	New Jersey .....	286 292	198 812
	New Mexico .....	4 097	N
	New York .....	259 026	237 196
	North Carolina .....	84 967	66 075
	Ohio .....	830 905	624 010
	Oklahoma .....	20 738	11 797

See footnotes at end of table.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3321161</b>	<b>METAL JOB STAMPINGS, EXCEPT AUTOMOTIVE—Con.</b>		
	Oregon .....	27 041	24 099
	Pennsylvania .....	310 159	291 155
	Rhode Island .....	52 507	31 884
	South Carolina .....	16 576	10 341
	Tennessee .....	143 338	65 296
	Texas .....	198 561	108 775
	Utah .....	3 625	N
	Virginia .....	34 512	N
	Washington .....	34 362	19 252
	West Virginia .....	3 253	6 516
	Wisconsin .....	595 865	333 718
<b>3321163</b>	<b>METAL SPINNING PRODUCTS, EXCLUDING COOKING AND KITCHEN UTENSILS</b>		
	United States .....	<b>163 997</b>	<b>109 478</b>
	California .....	21 741	7 354
	Connecticut .....	5 501	N
	Illinois .....	13 486	16 075
	Indiana .....	20 867	20 572
	Michigan .....	18 860	N
	Minnesota .....	5 755	N
	Ohio .....	8 593	6 358
	Tennessee .....	5 415	N
	Wisconsin .....	20 340	18 172
<b>3321165</b>	<b>OTHER STAMPED AND PRESSED METAL END PRODUCTS, INCLUDING VITREOUS ENAMELED PRODUCTS</b>		
	United States .....	<b>2 880 251</b>	<b>1 856 636</b>
	Arizona .....	21 181	21 869
	California .....	206 999	162 198
	Colorado .....	32 560	19 308
	Connecticut .....	145 260	120 448
	Florida .....	66 966	48 145
	Georgia .....	50 678	31 599
	Illinois .....	405 629	221 414
	Indiana .....	26 321	18 692
	Iowa .....	81 673	N
	Kansas .....	4 031	N
	Kentucky .....	8 508	18 123
	Louisiana .....	20 492	N
	Massachusetts .....	107 472	123 994
	Michigan .....	134 762	77 270
	Minnesota .....	281 821	59 459
	Missouri .....	130 498	107 690
	New Jersey .....	32 643	29 502
	New York .....	79 729	94 807
	North Carolina .....	18 805	N
	Ohio .....	213 141	169 761
	Oklahoma .....	56 590	N
	Oregon .....	28 117	9 905
	Pennsylvania .....	256 861	132 502
	Rhode Island .....	73 915	N
	South Carolina .....	6 163	N
	Tennessee .....	43 978	15 254
	Texas .....	110 702	59 599
	Washington .....	10 707	3 049
	Wisconsin .....	38 234	77 615

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332116</b>	<b>METAL STAMPING</b>				
33272203	Metal bolts, nuts, screws, washers, rivets, and other screw machine products .....	X	151 735	X	N
33200095	Other fabricated metal products (except forgings) .....	X	486 652	X	N
33151001	Iron and steel castings (rough and semifinished) .....	X	40 449	X	N
33152011	Nonferrous (aluminum, copper, etc.) castings (rough and semifinished) .....	X	10 080	X	N
33210001	Forgings .....	X	3 403	X	N
33120071	Steel bars and bar shapes (except castings, forgings, and fabricated metal products) .....	X	91 153	X	N
33120017	Steel sheet and strip, including tin plate .....,1,000 s tons..	S	1 260 064	X	N
33120079	Steel plate .....	X	57 670	X	N
33120025	Steel wire and wire products .....	X	30 102	X	N
33120013	Steel tinplate, tin free steel, terneplate, and blackplate .....,1,000 s tons..	S	36 028	X	N

See footnotes at end of table.



**Table 7. Materials Consumed by Kind: 1997 and 1992—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332116</b>	<b>METAL STAMPING—Con.</b>				
33120027	All other steel shapes and forms (except castings, forgings, and fabricated metal products) .....	X	274 938	X	N
33142111	Copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	117 745	X	N
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing .....	X	190 492	X	N
33131600	Aluminum and aluminum-base alloy extruded shapes, including extruded rod, bar, pipe, tube, etc. ....	X	22 671	X	N
33100049	Other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	72 386	X	N
33100083	Other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	58 803	X	N
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc. ....	X	28 051	X	N
32551003	Paints, varnishes, lacquers, stains, shellacs, japans, enamels, and allied products .....	X	48 353	X	N
32500051	All other chemicals and allied products .....	X	12 533	X	N
32610013	Plastics products consumed in the form of sheets, rods, tubes, film, and other shapes .....	X	17 672	X	N
32221001	Paperboard containers, boxes, and corrugated paperboard .....	X	87 947	X	N
32200007	Other paper and paperboard products .....	X	20 720	X	N
33510000	Special dies, tools, die sets, jigs, and fixtures, except cutting tools for machine tools .....	X	62 792	X	N
00970099	All other materials and components, parts, containers, and supplies .....	X	595 735	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	933 003	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332116 METAL STAMPING**

This U.S. industry comprises establishments primarily engaged in manufacturing unfinished metal stampings and spinning unfinished metal products (except crowns, cans, closures, automotive, and coins). Establishments making metal stampings and metal spun products and further manufacturing (e.g., machining, assembling) a specific product are classified in the industry of the finished

product. Metal stamping and metal spun products establishments may perform surface finishing operations, such as cleaning and deburring, on the products they manufacture.

The data published with NAICS code 332116 include the following SIC industry:

3469 Metal stampings, n.e.c. (pt)



# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the *nsk* categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.



## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.









1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3329991	34971	34971	332999AYWV	3499500	3499500	332999GYWV pt...	3999900 pt	3999900 pt
3329991101	3497132	3497132	332999G pt	32918 pt	32918 pt	332999W pt	32910 pt	32910 pt
3329991106	3497133	3497133	332999G pt	34323 pt	34323 pt	332999W pt	34320 pt	34320 pt
3329991111	3497137	3497137	332999G pt	34945 pt	34945 pt	332999W pt	34940 pt	34940 pt
3329991YWV	3497100	3497100	332999G pt	34998 pt	34998 pt	332999W pt	34970 pt	34970 pt
3329993	34973	34973	332999G pt	34998 pt	34998 pt	332999W pt	34990 pt	34990 pt
3329993101	3497352	3497352	332999G pt	35373 pt	35373 pt	332999W pt	34990 pt	34990 pt
3329993106	3497354	3497354	332999G pt	39999 pt	39999 pt	332999W pt	35370 pt	35370 pt
3329993111	3497358	3497358	332999G101	3499811	3499811	332999W pt	35990 pt	35990 pt
3329993YWV	3497300	3497300	332999G106	3499819	3499819	332999W pt	39990 pt	39990 pt
3329994	35994 pt	35994 pt	332999G189	3494571	3494571	332999W pt	3291000 pt	3291000 pt
3329994101	3599411	3599411	332999G301	3499829	3499829	332999WYWWW pt...	3432000 pt	3432000 pt
3329994106	3599413	3599413	332999G303	3499839	3499839	332999WYWWW pt...	3494000 pt	3494000 pt
3329994111	3599415	3599415	332999G305	3537331	3537331	332999WYWWW pt...	3497000 pt	3497000 pt
3329994116	3599416	3599416	332999G306 pt	3999991 pt	3999913 pt	332999WYWWW pt...	3499000 pt	3499000 pt
3329994121	3599425	3599425	332999G306 pt	3999991 pt	3999944 pt	332999WYWWW pt...	3537000 pt	3537000 pt
3329994YWV	3599400 pt	3599400 pt	332999G306 pt	3999991 pt	3999999 pt	332999WYWWW pt...	3599000 pt	3599000 pt
3329997	34992	34992	332999G313	3291831	3291831	332999WYWWW pt...	3999000 pt	3999000 pt
3329997101	3499211	3499211	332999G316	3291835	3291890 pt	332999WYWWW pt...	3291002 pt	3291002 pt
3329997106	3499213	3499213	332999G399 pt	3432329	3432332 pt	332999WYWWW pt...	3432002 pt	3432002 pt
3329997YWV	3499200	3499200	332999G399 pt	3499898	3499899 pt	332999WYWWW pt...	3494002 pt	3494002 pt
3329999	34993	34993	332999GYWV pt...	3291800 pt	3291800 pt	332999WYWWW pt...	3497002 pt	3497002 pt
3329999100	3499300	3499300	332999GYWV pt...	3432300 pt	3432300 pt	332999WYWWW pt...	3499002 pt	3499002 pt
332999A	34995	34995	332999GYWV pt...	3494500 pt	3494500 pt	332999WYWWW pt...	3537002 pt	3537002 pt
332999A101	3499511	3499511	332999GYWV pt...	3499800 pt	3499800 pt	332999WYWWW pt...	3599002 pt	3599002 pt
332999A106	3499521	3499521	332999GYWV pt...	3537300 pt	3537300 pt	332999WYWWW pt...	3999002 pt	3999002 pt
332999A111	3499531	3499531						
332999A116	3499539	3499539						



# Powder Metallurgy Parts Manufacturing

# 1997

Issued October 1999

EC97M-3321F

## 1997 Economic Census

*Manufacturing*

Industry Series



## U S C E N S U S B U R E A U

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U.S. Department of Commerce  
Economics and Statistics Administration  
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Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**

Under Secretary for  
Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332117</b> 349910	<b>Powder metallurgy part mfg ...</b> Fabricated metal products, n.e.c. (pt) .....	111 N	126 126	10 089 10 089	323 921 323 921	7 488 7 488	15 711 15 711	211 118 211 118	662 602 662 602	468 212 468 212	1 133 747 1 133 747	82 079 82 079

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)	
	E <sup>1</sup>	Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)					Wages (\$1,000)
<b>332117, POWDER METALLURGY PART MFG</b>												
United States .....	-	126	83	10 089	323 921	7 488	15 711	211 118	662 602	468 212	1 133 747	82 079
California .....	1	9	4	243	7 353	180	324	3 856	15 504	7 974	23 461	1 869
Connecticut .....	-	7	6	1 024	38 131	473	869	18 169	28 680	22 216	52 361	1 475
Illinois .....	-	11	7	1 143	41 947	922	2 025	29 663	80 669	44 444	124 489	14 389
Michigan .....	-	10	9	466	14 709	357	708	8 649	30 051	22 384	52 462	3 017
Oklahoma .....	2	3	3	230	6 620	155	338	3 376	15 199	10 100	24 364	1 285
Pennsylvania .....	-	31	24	3 120	91 150	2 532	5 468	65 968	192 389	151 324	343 656	19 757
Wisconsin .....	-	6	4	803	22 403	542	995	11 365	63 728	29 312	92 628	8 784

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332117, POWDER METALLURGY PART MFG</b>		<b>332117, POWDER METALLURGY PART MFG—Con.</b>	
Companies <sup>1</sup> . . . . . number..	111	Value added . . . . . \$1,000..	662 602
All establishments . . . . . number..	126	Total inventories, beginning of year . . . . . \$1,000..	114 933
Establishments with 1 to 19 employees . . . . . number..	43	Finished goods inventories, beginning of year . . . . . \$1,000..	30 210
Establishments with 20 to 99 employees . . . . . number..	59	Work-in-process inventories, beginning of year . . . . . \$1,000..	46 339
Establishments with 100 employees or more . . . . . number..	24	Materials and supplies inventories, beginning of year . . . . . \$1,000..	38 384
All employees . . . . . number..	10 089	Total inventories, end of year . . . . . \$1,000..	115 367
Total compensation <sup>2</sup> . . . . . \$1,000..	397 962	Finished goods inventories, end of year . . . . . \$1,000..	27 707
Annual payroll . . . . . \$1,000..	323 921	Work-in-process inventories, end of year . . . . . \$1,000..	45 909
Total fringe benefits . . . . . \$1,000..	74 041	Materials and supplies inventories, end of year . . . . . \$1,000..	41 751
Production workers, average for year . . . . . number..	7 488	Gross book value of total assets at beginning of year . . . . . \$1,000..	600 657
Production workers on March 12 . . . . . number..	7 433	Total capital expenditures (new and used) . . . . . \$1,000..	82 079
Production workers on May 12 . . . . . number..	7 453	Capital expenditures for buildings and other structures (new and used) . . . . . \$1,000..	13 949
Production workers on August 12 . . . . . number..	7 420	Capital expenditures for machinery and equipment (new and used) . . . . . \$1,000..	68 130
Production workers on November 12 . . . . . number..	7 594	Total retirements <sup>2</sup> . . . . . \$1,000..	16 388
Production-worker hours . . . . . 1,000..	15 711	Gross book value of total assets at end of year . . . . . \$1,000..	666 348
Production-worker wages . . . . . \$1,000..	211 118	Total depreciation during year <sup>2</sup> . . . . . \$1,000..	44 988
Total cost of materials . . . . . \$1,000..	468 212	Total rental payments <sup>2</sup> . . . . . \$1,000..	10 273
Cost of materials, parts, containers, etc., consumed . . . . . \$1,000..	339 892	Buildings and other structures rental payments <sup>2</sup> . . . . . \$1,000..	5 041
Cost of resales . . . . . \$1,000..	13 232	Machinery and equipment rental payments <sup>2</sup> . . . . . \$1,000..	5 232
Cost of fuels . . . . . \$1,000..	9 231	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> . . . . . \$1,000..	1 654
Cost of purchased electricity . . . . . \$1,000..	20 811	Response coverage ratio <sup>4</sup> . . . . . percent..	71
Cost of contract work . . . . . \$1,000..	85 046	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> . . . . . \$1,000..	16 077
Quantity of electricity purchased for heat and power . . . . . 1,000 kWh..	377 552	Response coverage ratio <sup>4</sup> . . . . . percent..	71
Quantity of electricity generated less sold for heat and power . . . . . 1,000 kWh..	—	Cost of purchased communications services <sup>3</sup> . . . . . \$1,000..	2 067
Total value of shipments . . . . . \$1,000..	1 133 747	Response coverage ratio <sup>4</sup> . . . . . percent..	71
Primary products value of shipments . . . . . \$1,000..	1 051 912	Cost of purchased legal services <sup>3</sup> . . . . . \$1,000..	1 367
Secondary products value of shipments . . . . . \$1,000..	62 490	Response coverage ratio <sup>4</sup> . . . . . percent..	71
Total miscellaneous receipts . . . . . \$1,000..	19 345	Cost of purchased accounting and bookkeeping services <sup>3</sup> . . . . . \$1,000..	2 048
Value of resales . . . . . \$1,000..	16 107	Response coverage ratio <sup>4</sup> . . . . . percent..	71
Contract receipts . . . . . \$1,000..	1 019	Cost of purchased advertising services <sup>3</sup> . . . . . \$1,000..	1 263
Other miscellaneous receipts . . . . . \$1,000..	2 219	Response coverage ratio <sup>4</sup> . . . . . percent..	71
Primary products specialization ratio . . . . . percent..	94	Cost of purchased software and other data processing services <sup>3</sup> . . . . . \$1,000..	1 591
Value of primary products shipments made in all industries . . . . . \$1,000..	1 143 570	Response coverage ratio <sup>4</sup> . . . . . percent..	71
Value of primary products shipments made in this industry . . . . . \$1,000..	1 051 912	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> . . . . . \$1,000..	868
Value of primary products shipments made in other industries . . . . . \$1,000..	91 658	Response coverage ratio <sup>4</sup> . . . . . percent..	71
Coverage ratio . . . . . percent..	91		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)	
	E <sup>1</sup>	Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)					Wages (\$1,000)
<b>332117, POWDER METALLURGY PART MFG</b>												
<b>All establishments .....</b>	-	126	83	10 089	323 921	7 488	15 711	211 118	662 602	468 212	1 133 747	82 079
Establishments with 1 to 4 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 5 to 9 employees .....	3	15	-	126	4 003	96	170	2 606	9 091	7 722	16 743	555
Establishments with 10 to 19 employees .....	3	28	-	393	11 216	286	503	6 641	22 324	14 587	36 809	1 033
Establishments with 20 to 49 employees .....	1	25	25	889	26 899	654	1 336	16 405	72 190	47 082	118 040	7 277
Establishments with 50 to 99 employees .....	-	34	34	2 506	72 382	1 974	4 144	46 427	184 444	163 842	348 249	23 893
Establishments with 100 to 249 employees .....	-	16	16	2 691	86 743	2 059	4 171	56 934	180 821	109 771	294 825	26 147
Establishments with 250 to 499 employees .....	-	5	5	1 504	49 432	1 178	2 446	36 015	114 609	66 047	180 767	13 856
Establishments with 500 to 999 employees .....	-	3	3	1 980	73 246	1 241	2 941	46 090	79 123	59 161	138 314	9 318
Establishments with 1,000 to 2,499 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	3	-	28	781	21	39	508	1 527	1 398	2 925	108

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332117</b>	<b>Powder metallurgy part mfg .....</b>	<b>126</b>	<b>10 089</b>	<b>323 921</b>	<b>7 488</b>	<b>15 711</b>	<b>211 118</b>	<b>662 602</b>	<b>468 212</b>	<b>1 133 747</b>	<b>82 079</b>

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332117</b>	<b>Powder metallurgy parts .....</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>1 143 570</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3321170	Powder metallurgy parts, excluding bearings, gears, and machine cutting tools and all cemented carbide parts .....	N	X	X	1 143 570	N	X	X	N
33211701	Copper and copper-base alloy powder metallurgy parts, excluding bearings, gears, and machine cutting tools and all cemented carbide parts .....	N	X	X	70 597	N	X	X	N
3321170106	Copper and copper-base alloy powder metallurgy parts, excluding bearings, gears, and machine cutting tools and all cemented carbide parts ..... mil lb..	27	X	S	70 597	33	X	S	59 839
33211702	Iron and steel powder metallurgy parts, excluding bearings, gears, and machine cutting tools and all cemented carbide parts .....	N	X	X	657 330	N	X	X	N
3321170211	Iron and steel powder metallurgy parts, excluding bearings, gears, and machine cutting tools and all cemented carbide parts ..... mil lb..	57	X	S	657 330	77	X	S	465 322
33211703	Tungsten metal and tungsten-base alloy powder metallurgy parts, excluding bearings, gears, and machine cutting tools and all cemented carbide parts .....	N	X	X	129 206	N	X	X	N
3321170321	Tungsten metal and tungsten-base alloy powder metallurgy parts, excluding bearings, gears, and machine cutting tools and all cemented carbide parts ..... mil lb..	13	X	P7.5	129 206	23	X	Q5.7	128 899
33211704	Powder metallurgy materials, excluding bearings, gears, and machine cutting tools and all cemented carbide parts .....	N	X	X	181 385	N	X	X	N
3321170401	Aluminum and aluminum-base alloy powder metallurgy parts, excluding bearings, gears, and machine cutting tools and all cemented carbide parts .....	11	X	S	34 629	12	X	S	30 136
3321170416	Nickel-cobalt-base super alloy powder metallurgy parts, excluding bearings, gears, and machine cutting tools and all cemented carbide parts .....	12	X	S	34 737	11	X	S	24 227
3321170426	Other powder metallurgy materials, excluding bearings, gears, and machine cutting tools and all cemented carbide parts ..... mil lb..	23	X	S	112 019	25	X	S	106 353
3321170Y	Powder metallurgy parts, nsk, total .....	N	X	X	105 052	N	X	X	N
3321170YWW	Powder metallurgy parts, nsk, for nonadministrative-record establishments .....	N	X	X	102 234	N	X	X	N
3321170YWY	Powder metallurgy parts, nsk, for administrative-record establishments .....	N	X	X	2 818	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332117</b>	<b>POWDER METALLURGY PART MFG</b>				
33200097	Other fabricated metal products (except forgings) .....	X	4 321	X	N
33210001	Forgings .....	X	D	X	N
33151001	Iron and steel castings (rough and semifinished) .....	X	D	X	N
33152003	Other nonferrous castings (rough and semifinished) .....	X	D	X	N
33120029	All other steel shapes and forms (except castings, forgings, and fabricated metal products) .....	X	10 973	X	N
33142141	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	N
33100049	Other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	N
33100083	Other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	N
331000AA	Metal powders .....	X	207 085	X	N
00970099	All other materials and components, parts, containers, and supplies .....	X	47 299	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	66 679	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive



stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332117 POWDER METALLURGY PARTS MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing powder metallurgy products by compacting them in a shaped die and sintering. Establishments in this industry generally make a wide range of parts on a job or order basis.

The data published with NAICS code 332117 include the following SIC industry:

3499 Fabricated metal products, n.e.c. (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.



The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.

# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33211111	34625	34625	3321165281	3469989	3469989	3322127 pt.	37999 pt.	37999 pt.
3321111101	3462511	3462511	3321165291	3469997	3469997	3322127101	3423611	3423611
332111206	3462513	3462513	3321165361	3469971	3469971	3322127111	3423621	3423621
332111311	3462515	3462515	3321165YVW	3469900	3469900	3322127116	3423631	3423631
332111416	3462517	3462517	3321166W	34690 pt.	34690 pt.	3322127121	3423641	3423641
332111YVW	3462500	3462500	3321166WYVW	3469000 pt.	3469000 pt.	3322127131	3423681	3423681
3321113	34626	34626	3321166YVW	3469002 pt.	3469002 pt.	3322127136	3423685	3423685
3321113101	3462611	3462611	3321170 pt.	34990 pt.	34990 pt.	3322127141	3799906	3799923 pt.
3321113106	3462613	3462613	3321170 pt.	34990 pt.	34990 pt.	3322127199	3423698	3423698
3321113111	3462616	3462616	3321170 pt.	34990 pt.	34990 pt.	3322127226	3524101	3524100 pt.
3321113YVW	3462600	3462600	3321170 pt.	34996	34996	3322127YVW pt.	3423600	3423600
3321115	34627	34627	3321170106	3499633	3499633	3322127YVW pt.	3524100 pt.	3524100 pt.
3321115101	3462712	3462712	3321170211	3499655	3499655	3322127YVW pt.	3799900 pt.	3799900 pt.
3321115106	3462716	3462716	3321170321	3499677	3499677	3322129 pt.	35455	35455
3321115YVW	3462700	3462700	3321170401	3499611	3499611	3322129 pt.	35455	35455
3321117	34628	34628	3321170416	3499666	3499666	3322129 pt.	36992 pt.	36992 pt.
3321117101	3462812	3462812	3321170426	3499688	3499688	3322129101	3545511	3545511
3321117106	3462816	3462816	3321170YVW pt.	3499000 pt.	3499000 pt.	3322129106	3545513	3545513
3321117YVW	3462800	3462800	3321170YVW pt.	3499600	3499600	3322129111	3545515	3545515
332111W	34620	34620	3321170YVW pt.	3499002 pt.	3499002 pt.	3322129116	3545517	3545517
332111WYVW	3462000	3462000	3322111 pt.	39141 pt.	39141 pt.	3322129121	3545521	3545521
332111YVW	3462002	3462002	3322111 pt.	39142 pt.	39142 pt.	3322129126	3545561	3545561
3321121	34635	34635	332211101	3421111	3421111	3322129131	3545565	3545565
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						332214WYVW	3469002 pt.	3469002 pt.









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3329991111	3497137	3497137	332999G pt	34945 pt	34945 pt	332999W pt	34940 pt	34940 pt
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3329993	34973	34973	332999G pt	34998 pt	34998 pt	332999W pt	34990 pt	34990 pt
3329993101	3497352	3497352	332999G pt	35373 pt	35373 pt	332999W pt	34990 pt	34990 pt
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332999A111	3499531	3499531						
332999A116	3499539	3499539						



# Cutlery and Flatware (Except Precious) Manufacturing

# 1997

Issued August 1999

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## 1997 Economic Census

*Manufacturing*

Industry Series



# U S C E N S U S B U R E A U

*Helping You Make Informed Decisions*

U.S. Department of Commerce  
Economics and Statistics Administration  
U.S. CENSUS BUREAU



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## 1997 Economic Census

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Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director





**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.



**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332211</b>	<b>Cutlery &amp; flatware (except precious) mfg</b> .....	<b>165</b>	<b>173</b>	<b>11 102</b>	<b>354 889</b>	<b>8 682</b>	<b>16 686</b>	<b>232 204</b>	<b>1 680 306</b>	<b>531 063</b>	<b>2 170 974</b>	<b>215 248</b>
342100	Cutlery .....	N	162	11 001	352 190	8 610	16 564	230 985	1 675 015	528 297	2 162 942	215 193
391410	Silverware & plated ware (pt) ..	N	11	101	2 699	72	122	1 219	5 291	2 766	8 032	55

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.  
<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332211, CUTLERY &amp; FLATWARE (EXCEPT PRECIOUS) MFG</b>												
United States .....	-	173	55	11 102	354 889	8 682	16 686	232 204	1 680 306	531 063	2 170 974	215 248
California .....	4	16	4	718	24 502	511	796	12 366	69 886	31 560	103 208	3 895
Illinois .....	1	8	4	283	7 152	234	403	4 982	23 146	10 153	33 782	1 525
New Jersey .....	-	7	6	423	11 195	338	703	6 944	39 467	28 382	67 515	1 700
New York .....	2	20	11	1 965	53 762	1 564	3 125	37 479	127 620	69 184	194 695	9 528
Ohio .....	3	12	2	233	7 073	176	320	4 323	14 381	9 776	24 159	1 087
Pennsylvania .....	4	12	4	553	14 134	420	755	9 531	40 163	14 707	54 507	3 246

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332211, CUTLERY &amp; FLATWARE (EXCEPT PRECIOUS) MFG</b>		<b>332211, CUTLERY &amp; FLATWARE (EXCEPT PRECIOUS) MFG—Con.</b>	
Companies <sup>1</sup> .....	number.. 165	Value added .....	\$1,000.. 1 680 306
All establishments .....	number.. 173	Total inventories, beginning of year .....	\$1,000.. 277 729
Establishments with 1 to 19 employees .....	number.. 118	Finished goods inventories, beginning of year .....	\$1,000.. 115 192
Establishments with 20 to 99 employees .....	number.. 31	Work-in-process inventories, beginning of year .....	\$1,000.. 85 458
Establishments with 100 employees or more .....	number.. 24	Materials and supplies inventories, beginning of year .....	\$1,000.. 77 079
All employees .....	number.. 11 102	Total inventories, end of year .....	\$1,000.. 324 435
Total compensation <sup>2</sup> .....	\$1,000.. 473 198	Finished goods inventories, end of year .....	\$1,000.. 139 359
Annual payroll .....	\$1,000.. 354 889	Work-in-process inventories, end of year .....	\$1,000.. 101 686
Total fringe benefits .....	\$1,000.. 118 309	Materials and supplies inventories, end of year .....	\$1,000.. 83 390
Production workers, average for year .....	number.. 8 682	Gross book value of total assets at beginning of year .....	\$1,000.. 976 303
Production workers on March 12 .....	number.. 8 607	Total capital expenditures (new and used) .....	\$1,000.. 215 248
Production workers on May 12 .....	number.. 8 472	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 6 544
Production workers on August 12 .....	number.. 8 799	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 208 704
Production workers on November 12 .....	number.. 8 850	Total retirements <sup>2</sup> .....	\$1,000.. 37 782
Production-worker hours .....	1,000.. 16 686	Gross book value of total assets at end of year .....	\$1,000.. 1 153 769
Production-worker wages .....	\$1,000.. 232 204	Total depreciation during year <sup>2</sup> .....	\$1,000.. 61 967
Total cost of materials .....	\$1,000.. 531 063	Total rental payments <sup>2</sup> .....	\$1,000.. 5 907
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 434 212	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 3 241
Cost of resales .....	\$1,000.. 40 049	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 2 666
Cost of fuels .....	\$1,000.. 6 882	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 3 238
Cost of purchased electricity .....	\$1,000.. 16 692	Response coverage ratio <sup>4</sup> .....	percent.. 78
Cost of contract work .....	\$1,000.. 33 228	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 5 057
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 232 825	Response coverage ratio <sup>4</sup> .....	percent.. 78
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. D	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 3 389
Total value of shipments .....	\$1,000.. 2 170 974	Response coverage ratio <sup>4</sup> .....	percent.. 78
Primary products value of shipments .....	\$1,000.. 1 941 546	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 3 304
Secondary products value of shipments .....	\$1,000.. 164 134	Response coverage ratio <sup>4</sup> .....	percent.. 78
Total miscellaneous receipts .....	\$1,000.. 65 294	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 982
Value of resales .....	\$1,000.. 61 932	Response coverage ratio <sup>4</sup> .....	percent.. 78
Contract receipts .....	\$1,000.. 800	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 10 384
Other miscellaneous receipts .....	\$1,000.. 2 562	Response coverage ratio <sup>4</sup> .....	percent.. 78
Primary products specialization ratio .....	percent.. 92	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 1 888
Value of primary products shipments made in all industries .....	\$1,000.. 2 125 768	Response coverage ratio <sup>4</sup> .....	percent.. 78
Value of primary products shipments made in this industry .....	\$1,000.. 1 941 546	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 1 537
Value of primary products shipments made in other industries .....	\$1,000.. 184 222	Response coverage ratio <sup>4</sup> .....	percent.. 78
Coverage ratio .....	percent.. 91		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332211, CUTLERY &amp; FLATWARE (EXCEPT PRECIOUS) MFG</b>												
<b>All establishments</b> .....	-	<b>173</b>	<b>55</b>	<b>11 102</b>	<b>354 889</b>	<b>8 682</b>	<b>16 686</b>	<b>232 204</b>	<b>1 680 306</b>	<b>531 063</b>	<b>2 170 974</b>	<b>215 248</b>
Establishments with 1 to 4 employees .....	9	68	-	117	2 598	93	140	1 622	9 443	4 671	14 117	704
Establishments with 5 to 9 employees .....	9	25	-	169	4 287	132	217	2 714	15 115	7 770	22 958	1 132
Establishments with 10 to 19 employees .....	6	25	-	363	9 967	270	478	6 030	29 062	14 888	43 987	1 756
Establishments with 20 to 49 employees .....	1	16	16	510	14 246	374	709	7 397	33 004	18 001	50 906	1 155
Establishments with 50 to 99 employees .....	1	15	15	1 106	28 901	830	1 584	17 175	86 899	55 464	142 649	3 270
Establishments with 100 to 249 employees .....	1	13	13	1 954	51 920	1 557	3 183	35 184	166 246	92 342	256 696	10 966
Establishments with 250 to 499 employees .....	1	6	6	1 939	57 953	1 496	2 839	39 511	179 732	93 477	266 154	10 004
Establishments with 500 to 999 employees .....	-	3	3	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	2	2	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	97	-	472	10 737	374	571	7 131	40 943	20 320	61 306	3 289

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332211</b>	<b>Cutlery &amp; flatware (except precious) mfg</b> .....	<b>173</b>	<b>11 102</b>	<b>354 889</b>	<b>8 682</b>	<b>16 686</b>	<b>232 204</b>	<b>1 680 306</b>	<b>531 063</b>	<b>2 170 974</b>	<b>215 248</b>
3322111	Cutlery, scissors, shears, trimmers, and snips .....	56	6 830	183 675	5 389	9 781	121 532	561 477	302 937	852 255	30 273
3322113	Razor blades and razors, except electric .....	11	3 746	159 278	2 879	6 271	102 781	1 073 739	205 751	1 251 207	181 350

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332211</b>	<b>Cutlery and flatware (except precious) .....</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>2 125 768</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3322111	Cutlery, scissors, shears, trimmers, and snips .....	N	X	X	870 853	N	X	X	N
33221111	Table cutlery (knives, forks, spoons, etc.) for food serving and eating, with handles of materials other than metal .....	N	X	X	43 809	N	X	X	N
3322111101	Table cutlery (knives, forks, spoons, etc.) for food serving and eating, with handles of materials other than metal .....	10	X	X	36 332	5	X	X	30 757
3322111103	Flatware made of base metal clad with nonprecious metal (including partly finished flatware) .....	1	X	X	D	N	X	X	N
3322111106	Base metal hollowware clad with nonprecious metal .....	8	X	X	D	N	X	X	N
33221112	Cutlery .....	N	X	X	155 921	N	X	X	N
3322111211	Kitchen cutlery (including knives, forks, cleavers, butchers, and meat packing cutlery), excluding carving sets .....	8	X	X	80 756	11	X	X	76 393
3322111222	Other cutlery (including knife blades sold separately) .....	14	X	X	75 165	12	X	X	28 726
33221113	Scissors and shears .....	N	X	X	439 826	N	X	X	N
3322111326	Household scissors and barber shears, pinking shears, and tailoring shears .....	8	X	X	154 726	11	X	X	78 063
3322111331	Manicure and pedicure scissors and implements (including tweezers) .....	5	X	X	111 805	5	X	X	91 415
3322111336	Metal cutting shears (including aviation and tinner's snips, BX and wire filament cutters) .....	14	X	X	61 999	12	X	X	27 383
3322111344	All other scissors and shears (including hedge and grass shears and pruners) .....	17	X	X	111 296	16	X	X	108 417
33221114	Other knives (including pocket, pen, and replacement blade knives) .....	N	X	X	230 484	N	X	X	N
3322111455	Other knives (including pocket, pen, and replacement blade knives) .....	24	X	X	230 484	31	X	X	187 960
3322111Y	Cutlery, scissors, shears, trimmers, and snips, nsk .....	N	X	X	813	N	X	X	N
3322111YWV	Cutlery, scissors, shears, trimmers, and snips, nsk .....	N	X	X	813	N	X	X	N
3322113	Razor blades and razors, except electric .....	N	X	X	1 182 163	N	X	X	803 883
33221131	Razor blades and razors, except electric .....	N	X	X	1 182 163	N	X	X	N
3322113101	Razors, except electric .....	3	X	X	D	3	X	X	D
3322113106	Razor blades, single and double edge for shaving .....	5	X	X	1 062 626	3	X	X	D
3322113111	Razor blades for all other uses .....	13	X	X	D	9	X	X	28 829
3322113Y	Razor blades and razors, except electric, nsk .....	N	X	X	-	N	X	X	N
3322113YWV	Razor blades and razors, except electric, nsk .....	N	X	X	-	N	X	X	53
332211W	Cutlery, nsk, total .....	N	X	X	72 752	N	X	X	N
332211WY	Cutlery, nsk, total .....	N	X	X	72 752	N	X	X	N
332211WYWW	Cutlery, nsk, for nonadministrative-record establishments .....	N	X	X	9 946	N	X	X	N
332211WYWY	Cutlery, nsk, for administrative-record establishments .....	N	X	X	62 806	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3322111	<b>CUTLERY, SCISSORS, SHEARS, TRIMMERS, AND SNIPS</b>		
	<b>United States</b> .....	<b>870 853</b>	<b>N</b>
	California .....	86 934	N
	Illinois .....	35 430	N
	Massachusetts .....	31 859	N
	New York .....	153 664	N
	Oregon .....	42 503	N
	Pennsylvania .....	39 424	N
3322113	<b>RAZOR BLADES AND RAZORS, EXCEPT ELECTRIC</b>		
	<b>United States</b> .....	<b>1 182 163</b>	<b>803 883</b>
	New Jersey .....	12 412	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332211</b>	<b>CUTLERY &amp; FLATWARE (EXCEPT PRECIOUS) MFG</b>				
33272203	Metal bolts, nuts, screws, washers, rivets, and other screw machine products .....	X	10 509	X	8 486
33200095	Other fabricated metal products (except forgings) .....	X	21 911	X	13 284
33151001	Iron and steel castings (rough and semifinished) .....	X	12 723	X	22 388
33152005	Aluminum and aluminum-base alloy castings (rough and semifinished) .....	X	1 654	X	3 474
33152003	Other nonferrous castings (rough and semifinished) .....	X	D	X	D
33211101	Iron and steel forgings .....	X	22 626	X	12 965
33120007	Steel bars, bar shapes, and plates (except castings, forgings, and fabricated metal products) .....	X	4 040	X	2 597
33120073	Steel sheet, strip, and tin mill products .....	X	68 600	X	22 694
33120025	Steel wire and wire products .....	X	1 941	X	790
33120027	All other steel shapes and forms (except castings, forgings, and fabricated metal products) .....	X	2 678	X	16 167
33142111	Copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	1 259	X	101
33100039	Aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	4 783	X	1 370
33100083	Other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	D
32100047	Wood parts, including handles .....	X	7 244	X	7 141
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc. ....	X	35 302	X	28 072
32610003	Plastics products (film, sheet, rod, tube, and fabricated shapes, including parts, handles, grips, etc.) .....	X	55 889	X	29 635
32220017	Paper and paperboard containers, including shipping sacks and other paper packaging supplies .....	X	61 249	X	43 522
33141901	Precious metals (gold, platinum, etc.), all forms, including ingot, sheet, strip, solder, plating, electrodes, etc. ....	X	D	X	N
00970099	All other materials and components, parts, containers, and supplies .....	X	77 537	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	39 515	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each



product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332211 CUTLERY AND FLATWARE (EXCEPT PRECIOUS) MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing nonprecious and precious plated metal cutlery and flatware.

The data published with NAICS code 332211 include the following SIC industries:

3421 Cutlery 3914 Silverware and plated ware (pt)

This definition comes from the 1997 NAICS Manual. However, for this industry, the 1997 Economic Census – Manufacturing did not fully implement the conversion to NAICS. Data for NAICS industry 332211 do not include establishments primarily engaged in the manufacture of hand-operated clippers for human hair. The NAICS definitions will be fully implemented with the 2002 Economic Census.

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## **DESCRIPTION OF THE ASM ESTIMATING PROCEDURE**

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference



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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.

# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33211111	34625	34625	3321165281	3469989	3469989	3322127 pt.	37999 pt.	37999 pt.
3321111101	3462511	3462511	3321165291	3469997	3469997	3322127101	3423611	3423611
332111206	3462513	3462513	3321165361	3469971	3469971	3322127111	3423621	3423621
332111311	3462515	3462515	3321165YVW	3469900	3469900	3322127116	3423631	3423631
332111416	3462517	3462517	3321166W	34690 pt.	34690 pt.	3322127121	3423641	3423641
332111YVW	3462500	3462500	3321166YVW	3469000 pt.	3469000 pt.	3322127131	3423681	3423681
3321113	34626	34626	3321166YVW	3469002 pt.	3469002 pt.	3322127136	3423685	3423685
3321113101	3462611	3462611	3321170 pt.	34990 pt.	34990 pt.	3322127141	3799906	3799923 pt.
3321113106	3462613	3462613	3321170 pt.	34990 pt.	34990 pt.	3322127199	3423698	3423698
3321113111	3462616	3462616	3321170 pt.	34996	34996	3322127226	3524101	3524100 pt.
3321113YVW	3462600	3462600	3321170106	3499633	3499633	3322127YVW pt.	3423600	3423600
3321115	34627	34627	3321170211	3499655	3499655	3322127YVW pt.	3524100 pt.	3524100 pt.
3321115101	3462712	3462712	3321170321	3499677	3499677	3322127YVW pt.	3799900 pt.	3799900 pt.
3321115106	3462716	3462716	3321170321	3499677	3499677	3322129 pt.	35455	35455
3321115YVW	3462700	3462700	3321170401	3499611	3499611	3322129 pt.	36992 pt.	36992 pt.
3321117	34628	34628	3321170416	3499666	3499666	3322129101	3545511	3545511
3321117101	3462812	3462812	3321170426	3499688	3499688	3322129106	3545513	3545513
3321117106	3462816	3462816	3321170YVW pt.	3499000 pt.	3499000 pt.	3322129111	3545515	3545515
3321117YVW	3462800	3462800	3321170YVW pt.	3499600	3499600	3322129116	3545517	3545517
332111W	34620	34620	3321170YVW	3499002 pt.	3499002 pt.	3322129121	3545521	3545521
332111YVW	3462000	3462000	3322111 pt.	39141 pt.	39141 pt.	3322129126	3545561	3545561
332111YVW	3462002	3462002	3322111 pt.	39142 pt.	39142 pt.	3322129131	3545565	3545565
3321121	34635	34635	332211101	3421111	3421111	3322129146	3545577	3545577
3321121101	3463521	3463521	3322111103	3914245	3914245	3322129161	3699255	3699200 pt.
3321121206	3463523	3463523	3322111106	3914155	3914170 pt.	3322129236	3545571	3545571
3321121311	3463525	3463525	3322112111	3421125	3421125	3322129341	3545573	3545573
3321121316	3463529	3463529	3322112222	3421130	3421130	3322129451	3545579	3545579
3321121YVW	3463500	3463500	3322113226	3421153	3421153	3322129YVW pt.	3545500	3545500
3321122	34639	34639	3322113311	3421155	3421155	3322129YVW pt.	3699200 pt.	3699200 pt.
3321122101	3463915	3463915	3322113336	3421157	3421157	332212W pt.	34230	34230
3321122106	3463925	3463925	3322113444	3421159	3421159	332212W pt.	35230 pt.	35230 pt.
3321122111	3463935	3463935	3322113455	3421180	3421180	332212W pt.	35240 pt.	35240 pt.
3321122YVW	3463900	3463900	3322113YVW	3421100	3421100	332212W pt.	35450 pt.	35450 pt.
332112W	34630	34630	3322113YVW	3421200	3421200	332212W pt.	36990 pt.	36990 pt.
332112WYVW	3463000	3463000	3322113101	3421205	3421205	332212W pt.	37990 pt.	37990 pt.
332112WYVW	3463002	3463002	3322113106	3421210	3421210	332212W pt.	39990 pt.	39990 pt.
3321140 pt.	34490 pt.	34490 pt.	3322113111	3421216	3421216	332212WYVW pt.	3423000	3423000
3321140 pt.	34498	34498	3322113YVW	3421200	3421200	332212WYVW pt.	3523000 pt.	3523000 pt.
3321140101	3449811	3449811	332211W pt.	34210	34210	332212WYVW pt.	3524000 pt.	3524000 pt.
3321140206	3449813	3449813	332211W pt.	34210	34210	332212WYVW pt.	3545000 pt.	3545000 pt.
3321140311	3449815	3449815	332211W pt.	39140 pt.	39140 pt.	332212WYVW pt.	3699000 pt.	3699000 pt.
3321140416	3449817	3449817	332211WYVW pt.	3421000	3421000	332212WYVW pt.	3799000 pt.	3799000 pt.
3321140YVW pt.	3449000 pt.	3449000 pt.	332211WYVW pt.	3914000 pt.	3914000 pt.	332212WYVW pt.	3999000 pt.	3999000 pt.
3321140YVW pt.	3449800	3449800	332211WYVW pt.	3421002	3421002	332212WYVW pt.	3423002	3423002
3321140YVW	3449002 pt.	3449002 pt.	332211WYVW pt.	3914002 pt.	3914002 pt.	332212WYVW pt.	3523002 pt.	3523002 pt.
3321150 pt.	34660	34660	3322121 pt.	34231	34231	332212WYVW pt.	3524002 pt.	3524002 pt.
3321150 pt.	34661	34661	3322121 pt.	39999 pt.	39999 pt.	332212WYVW pt.	3545002 pt.	3545002 pt.
3321150101	3466105	3466105	3322121101	3423112	3423112	332212WYVW pt.	3699002 pt.	3699002 pt.
3321150103 pt.	3466200 pt.	3466200	3322121206	3423113	3423113	332212WYVW pt.	3799002 pt.	3799002 pt.
3321150103 pt.	3466200 pt.	3466230	3322121311	3423121	3423121	332212WYVW pt.	3999002 pt.	3999002 pt.
3321150103 pt.	3466200 pt.	3466230	3322121351	3423141	3423141	3322130	34250	34250
3321150106 pt.	3466123 pt.	3466120	3322121356	3423151	3423151	3322130101	3425011	3425011
3321150106 pt.	3466123 pt.	3466122	3322121361	3423155	3423155	3322130106	3425013	3425013
3321150YVW pt.	3466000	3466000	3322121365	3999971	3999971	3322130111	3425016	3425016
3321150YVW pt.	3466100	3466100	3322121399	3423197	3423197	3322130116	3425018	3425018
3321150YVW	3466002	3466002	3322121416	3423131	3423131	3322130122	3425019	3425019
3321161	34692	34692	3322121421	3423133	3423133	3322130226	3425031	3425031
3321161101	3469201	3469201	3322121426	3423136	3423136	3322130231	3425035	3425035
3321161115	3469215	3469215	3322121431	3423137	3423137	3322130244	3425039	3425039
3321161205	3469205	3469205	3322121436	3423138	3423138	3322130255	3425041	3425041
3321161311	3469211	3469211	3322121444	3423139	3423139	3322130361	3425043	3425043
3321161331	3469231	3469231	3322121YVW pt.	3423100	3423100	3322130365	3425045	3425045
3321161352	3469252	3469252	3322121YVW pt.	3999900 pt.	3999900 pt.	3322130377	3425049	3425049
3321161354	3469253	3469253	3322123 pt.	34234	34234	3322130YVW	3425000	3425000
3321161388	3469288	3469288	3322123 pt.	3523E pt.	3523E pt.	3322130YVW	3425002	3425002
3321161398	3469298	3469298	3322123101	3423414	3423414	3322141	34694	34694
3321161421	3469220	3469220	3322123106	3423433	3423433	3322141111	3469411	3469411
3321161441	3469241	3469241	3322123111	3423444	3423444	3322141221	3469414	3469414
3321161525	3469225	3469225	3322123121	3423498	3423498	3322141231	3469417	3469417
3321161561	3469261	3469261	3322123216	3523E80	3523E00 pt.	3322141241	3469429	3469429
3321161571	3469271	3469271	3322123YVW pt.	3423400	3423400	3322141YVW	3469400	3469400
3321161584	3469284	3469284	3322123YVW pt.	3523E00 pt.	3523E00 pt.	3322143	34695	34695
3321161YVW	3469200	3469200	3322125	34235	34235	3322143101	3469507	3469507
3321163	34696	34696	3322125101	3423511	3423511	3322143211	3469509	3469509
3321163100	3469600	3469600	3322125206	3423512	3423512	3322143221	3469515	3469515
3321165	34699	34699	3322125311	3423521	3423521	3322143231 pt.	3469525 pt.	3469525
3321165101	3469941	3469941	3322125316	3423522	3423522	3322143231 pt.	3469525 pt.	3469525
3321165211	3469948	3469948	3322125321	3423531	3423531	3322143241 pt.	3469599 pt.	3469599
3321165221	3469951	3469951	3322125333	3423541	3423541	3322143YVW	3469500	3469500
3321165231	3469959	3469959	3322125YVW	3423500	3423500	3322143101	34690 pt.	34690 pt.
3321165241	3469961	3469961	3322127 pt.	34236	34236	332214WYVW	3469000 pt.	3469000 pt.
3321165251	3469969	3469969	3322127 pt.	35241 pt.	35241 pt.	332214WYVW	3469002 pt.	3469002 pt.
3321165271	3469985	3469985						









1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3329991	34971	34971	332999AYWV	3499500	3499500	332999GYWV pt...	3999900 pt	3999900 pt
3329991101	3497132	3497132	332999G pt	32918 pt	32918 pt	332999W pt	32910 pt	32910 pt
3329991106	3497133	3497133	332999G pt	34323 pt	34323 pt	332999W pt	34320 pt	34320 pt
3329991111	3497137	3497137	332999G pt	34945 pt	34945 pt	332999W pt	34940 pt	34940 pt
3329991YVV	3497100	3497100	332999G pt	34998 pt	34998 pt	332999W pt	34970 pt	34970 pt
3329993	34973	34973	332999G pt	34998 pt	34998 pt	332999W pt	34990 pt	34990 pt
3329993101	3497352	3497352	332999G pt	35373 pt	35373 pt	332999W pt	34990 pt	34990 pt
3329993106	3497354	3497354	332999G pt	39999 pt	39999 pt	332999W pt	35370 pt	35370 pt
3329993111	3497358	3497358	332999G101	3499811	3499811	332999W pt	35990 pt	35990 pt
3329993YVV	3497300	3497300	332999G106	3499819	3499819	332999W pt	39990 pt	39990 pt
3329994	35994 pt	35994 pt	332999G189	3494571	3494571	332999W pt	3291000 pt	3291000 pt
3329994101	3599411	3599411	332999G301	3499829	3499829	332999WYVVV pt...	3432000 pt	3432000 pt
3329994106	3599413	3599413	332999G303	3499839	3499839	332999WYVVV pt...	3494000 pt	3494000 pt
3329994111	3599415	3599415	332999G305	3537331	3537331	332999WYVVV pt...	3497000 pt	3497000 pt
3329994116	3599416	3599416	332999G306 pt	3999991 pt	3999913 pt	332999WYVVV pt...	3499000 pt	3499000 pt
3329994121	3599425	3599425	332999G306 pt	3999991 pt	3999944 pt	332999WYVVV pt...	3537000 pt	3537000 pt
3329994YVV	3599400 pt	3599400 pt	332999G306 pt	3999991 pt	3999999 pt	332999WYVVV pt...	3599000 pt	3599000 pt
3329997	34992	34992	332999G313	3291831	3291831	332999WYVVV pt...	3999000 pt	3999000 pt
3329997101	3499211	3499211	332999G316	3291835	3291890 pt	332999WYVVV pt...	3291002 pt	3291002 pt
3329997106	3499213	3499213	332999G399 pt	3432329	3432332 pt	332999WYVVV pt...	3432002 pt	3432002 pt
3329997YVV	3499200	3499200	332999G399 pt	3499898	3499899 pt	332999WYVVV pt...	3494002 pt	3494002 pt
3329999	34993	34993	332999GYWV pt...	3291800 pt	3291800 pt	332999WYVVV pt...	3497002 pt	3497002 pt
3329999100	3499300	3499300	332999GYWV pt...	3432300 pt	3432300 pt	332999WYVVV pt...	3499002 pt	3499002 pt
332999A	34995	34995	332999GYWV pt...	3494500 pt	3494500 pt	332999WYVVV pt...	3537002 pt	3537002 pt
332999A101	3499511	3499511	332999GYWV pt...	3499800 pt	3499800 pt	332999WYVVV pt...	3599002 pt	3599002 pt
332999A106	3499521	3499521	332999GYWV pt...	3537300 pt	3537300 pt	332999WYVVV pt...	3999002 pt	3999002 pt
332999A111	3499531	3499531						
332999A116	3499539	3499539						



# Hand and Edge Tool Manufacturing

1997

Issued September 1999

EC97M-3322B

## 1997 Economic Census

*Manufacturing*

Industry Series



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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.



# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufac-ture (\$1,000)	Cost of materials (\$1,000)	Value of ship-ments (\$1,000)	Total capital ex-pen-di-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332212</b>	<b>Hand &amp; edge tool mfg</b> .....	<b>1 159</b>	<b>1 262</b>	<b>50 038</b>	<b>1 623 276</b>	<b>37 032</b>	<b>74 919</b>	<b>983 969</b>	<b>4 156 663</b>	<b>2 409 017</b>	<b>6 564 907</b>	<b>231 647</b>
342300	Hand & edge tools, n.e.c. ....	N	1 066	42 906	1 328 251	32 743	65 758	838 301	3 533 393	2 129 338	5 673 042	195 761
352310	Farm machinery & equipment (pt) .....	N	1	D	D	D	D	D	D	D	D	D
352410	Lawn & garden equipment (pt) ..	N	3	D	D	D	D	D	D	D	D	D
354510	Machine tool accessories (pt) ..	N	180	6 070	244 318	3 605	7 917	124 237	477 218	214 493	682 008	29 384
369905	Electrical equipment & supplies, n.e.c. (pt) .....	N	4	424	32 361	144	273	8 016	97 791	44 658	140 811	3 818
379910	Transportation equipment, n.e.c. (pt) .....	N	1	D	D	D	D	D	D	D	D	-
399960	Manufacturing industries, n.e.c. (pt) .....	N	7	D	D	D	D	D	D	D	D	D

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.  
<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufac-ture (\$1,000)	Cost of materials (\$1,000)	Value of ship-ments (\$1,000)	Total capital ex-pen-di-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332212, HAND &amp; EDGE TOOL MFG</b>												
<b>United States</b> .....	<b>1</b>	<b>1 262</b>	<b>427</b>	<b>50 038</b>	<b>1 623 276</b>	<b>37 032</b>	<b>74 919</b>	<b>983 969</b>	<b>4 156 663</b>	<b>2 409 017</b>	<b>6 564 907</b>	<b>231 647</b>
California .....	1	178	43	3 830	133 457	2 507	4 669	60 263	323 406	180 268	503 199	18 115
Colorado .....	-	14	2	1 147	29 470	1 019	2 161	23 698	65 342	40 279	103 115	5 195
Connecticut .....	-	35	13	1 672	68 249	1 144	2 305	37 869	219 414	96 982	312 463	5 525
Florida .....	1	31	5	491	16 869	305	645	7 484	51 375	22 139	72 476	1 608
Georgia .....	3	23	10	741	19 670	539	850	10 700	44 632	34 563	78 968	2 362
Illinois .....	1	106	42	5 002	168 977	3 722	7 688	104 639	372 199	204 828	590 630	23 549
Indiana .....	2	31	13	1 161	35 032	862	1 803	22 194	81 691	51 886	133 091	2 828
Iowa .....	-	11	3	495	14 818	362	765	8 423	37 766	23 214	59 718	1 812
Michigan .....	2	111	39	2 832	115 513	2 040	4 378	67 208	240 146	122 623	361 153	15 971
Minnesota .....	-	36	18	2 165	76 254	1 351	2 879	37 411	185 129	177 295	356 211	17 083
Missouri .....	2	32	11	1 023	31 327	829	1 703	22 661	55 167	31 689	94 322	2 816
New Jersey .....	5	41	11	1 395	40 580	1 059	2 129	23 866	95 648	52 027	146 393	4 660
New York .....	-	57	14	1 515	54 724	928	1 854	23 284	145 490	96 492	242 918	6 995
North Carolina .....	-	33	17	1 886	61 066	1 563	3 159	43 310	161 124	151 010	312 454	7 184
North Dakota .....	-	3	3	147	4 025	94	152	2 068	7 574	8 627	16 242	509
Ohio .....	1	89	39	4 584	149 600	3 039	5 728	77 637	512 712	247 237	760 289	24 648
Pennsylvania .....	-	66	23	2 649	82 325	2 025	4 155	48 790	212 026	168 732	378 894	9 522
Rhode Island .....	-	11	4	682	25 494	322	892	13 718	45 128	20 025	65 244	2 962
South Carolina .....	-	13	6	1 725	49 409	1 524	3 218	39 648	145 579	88 194	237 952	4 580
Tennessee .....	1	24	10	1 108	30 987	937	1 669	22 615	73 536	21 798	94 371	3 671
Texas .....	1	34	7	1 296	33 641	1 151	2 610	26 783	63 605	56 623	123 475	3 928
Washington .....	2	26	3	314	8 119	269	540	6 204	15 374	8 894	24 232	748

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332212, HAND &amp; EDGE TOOL MFG</b>		<b>332212, HAND &amp; EDGE TOOL MFG—Con.</b>	
Companies <sup>1</sup> . . . . . number..	1 159	Value added . . . . . \$1,000..	4 156 663
All establishments . . . . . number..	1 262	Total inventories, beginning of year . . . . . \$1,000..	1 169 464
Establishments with 1 to 19 employees . . . . . number..	835	Finished goods inventories, beginning of year . . . . . \$1,000..	526 232
Establishments with 20 to 99 employees . . . . . number..	304	Work-in-process inventories, beginning of year . . . . . \$1,000..	363 576
Establishments with 100 employees or more . . . . . number..	123	Materials and supplies inventories, beginning of year . . . . . \$1,000..	279 656
All employees . . . . . number..	50 038	Total inventories, end of year . . . . . \$1,000..	1 187 227
Total compensation <sup>2</sup> . . . . . \$1,000..	2 050 583	Finished goods inventories, end of year . . . . . \$1,000..	508 149
Annual payroll . . . . . \$1,000..	1 623 276	Work-in-process inventories, end of year . . . . . \$1,000..	382 432
Total fringe benefits . . . . . \$1,000..	427 307	Materials and supplies inventories, end of year . . . . . \$1,000..	296 646
Production workers, average for year . . . . . number..	37 032	Gross book value of total assets at beginning of year . . . . . \$1,000..	2 241 585
Production workers on March 12 . . . . . number..	36 829	Total capital expenditures (new and used) . . . . . \$1,000..	231 647
Production workers on May 12 . . . . . number..	36 935	Capital expenditures for buildings and other structures (new and used) . . . . . \$1,000..	30 270
Production workers on August 12 . . . . . number..	36 999	Capital expenditures for machinery and equipment (new and used) . . . . . \$1,000..	201 377
Production workers on November 12 . . . . . number..	37 365	Total retirements <sup>2</sup> . . . . . \$1,000..	60 771
Production-worker hours . . . . . 1,000..	74 919	Gross book value of total assets at end of year . . . . . \$1,000..	2 412 461
Production-worker wages . . . . . \$1,000..	983 969	Total depreciation during year <sup>2</sup> . . . . . \$1,000..	156 773
Total cost of materials . . . . . \$1,000..	2 409 017	Total rental payments <sup>2</sup> . . . . . \$1,000..	70 925
Cost of materials, parts, containers, etc., consumed . . . . . \$1,000..	1 822 245	Buildings and other structures rental payments <sup>2</sup> . . . . . \$1,000..	30 188
Cost of resales . . . . . \$1,000..	399 126	Machinery and equipment rental payments <sup>2</sup> . . . . . \$1,000..	40 737
Cost of fuels . . . . . \$1,000..	22 277	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> . . . . . \$1,000..	14 342
Cost of purchased electricity . . . . . \$1,000..	64 544	Response coverage ratio <sup>4</sup> . . . . . percent..	85
Cost of contract work . . . . . \$1,000..	100 825	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> . . . . . \$1,000..	48 166
Quantity of electricity purchased for heat and power . . . . . 1,000 kWh..	1 064 090	Response coverage ratio <sup>4</sup> . . . . . percent..	85
Quantity of electricity generated less sold for heat and power . . . . . 1,000 kWh..	D	Cost of purchased communications services <sup>3</sup> . . . . . \$1,000..	19 613
Total value of shipments . . . . . \$1,000..	6 564 907	Response coverage ratio <sup>4</sup> . . . . . percent..	85
Primary products value of shipments . . . . . \$1,000..	5 335 703	Cost of purchased legal services <sup>3</sup> . . . . . \$1,000..	24 216
Secondary products value of shipments . . . . . \$1,000..	550 333	Response coverage ratio <sup>4</sup> . . . . . percent..	85
Total miscellaneous receipts . . . . . \$1,000..	678 871	Cost of purchased accounting and bookkeeping services <sup>3</sup> . . . . . \$1,000..	9 835
Value of resales . . . . . \$1,000..	616 829	Response coverage ratio <sup>4</sup> . . . . . percent..	85
Contract receipts . . . . . \$1,000..	26 553	Cost of purchased advertising services <sup>3</sup> . . . . . \$1,000..	74 655
Other miscellaneous receipts . . . . . \$1,000..	35 489	Response coverage ratio <sup>4</sup> . . . . . percent..	85
Primary products specialization ratio . . . . . percent..	90	Cost of purchased software and other data processing services <sup>3</sup> . . . . . \$1,000..	14 925
Value of primary products shipments made in all industries . . . . . \$1,000..	5 835 503	Response coverage ratio <sup>4</sup> . . . . . percent..	85
Value of primary products shipments made in this industry . . . . . \$1,000..	5 335 703	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> . . . . . \$1,000..	5 801
Value of primary products shipments made in other industries . . . . . \$1,000..	499 800	Response coverage ratio <sup>4</sup> . . . . . percent..	85
Coverage ratio . . . . . percent..	91		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.



**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332212, HAND &amp; EDGE TOOL MFG</b>												
<b>All establishments .....</b>	<b>1</b>	<b>1 262</b>	<b>427</b>	<b>50 038</b>	<b>1 623 276</b>	<b>37 032</b>	<b>74 919</b>	<b>983 969</b>	<b>4 156 663</b>	<b>2 409 017</b>	<b>6 564 907</b>	<b>231 647</b>
Establishments with 1 to 4 employees .....	9	400	—	794	21 692	636	1 088	14 083	48 393	32 965	81 630	3 275
Establishments with 5 to 9 employees .....	6	210	—	1 408	40 377	1 057	1 889	25 910	87 725	55 728	144 144	5 848
Establishments with 10 to 19 employees .....	3	225	—	3 173	93 097	2 318	4 313	55 918	196 945	100 914	298 091	10 128
Establishments with 20 to 49 employees .....	1	218	218	6 702	219 650	4 862	9 745	130 188	471 729	234 821	709 350	25 733
Establishments with 50 to 99 employees .....	2	86	86	6 044	190 892	4 431	8 913	110 065	410 484	239 727	651 276	24 571
Establishments with 100 to 249 employees .....	—	78	78	11 171	389 851	7 670	15 302	204 520	984 512	565 763	1 541 113	74 079
Establishments with 250 to 499 employees .....	—	31	31	10 541	337 780	8 375	17 538	226 018	963 079	585 240	1 552 225	40 642
Establishments with 500 to 999 employees .....	—	12	12	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	—	2	2	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records <sup>2</sup> .....	9	530	—	2 142	52 234	1 677	2 651	34 112	114 379	79 189	194 865	7 704

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332212</b>	<b>Hand &amp; edge tool mfg .....</b>	<b>1 262</b>	<b>50 038</b>	<b>1 623 276</b>	<b>37 032</b>	<b>74 919</b>	<b>983 969</b>	<b>4 156 663</b>	<b>2 409 017</b>	<b>6 564 907</b>	<b>231 647</b>
3322121	Mechanics' hand service tools.....	118	17 870	540 255	14 110	28 944	357 374	1 394 164	930 373	2 315 496	84 050
3322123	Edge tools, hand-operated.....	48	3 158	103 632	2 190	4 408	53 737	345 419	201 657	546 219	11 590
3322125	Dies and interchangeable cutting tools, for machines and power-driven handtools.....	242	9 302	310 228	6 800	13 728	189 222	670 055	283 994	959 806	54 643
3322127	Other handtools, nec.....	119	9 970	311 714	7 648	15 412	198 379	992 834	612 297	1 615 676	36 601
3322129	Precision measuring tools (inspection, quality control, tool room, and machinists').....	92	6 023	261 168	3 421	7 579	122 927	548 656	246 314	783 523	31 043

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332212</b>	<b>Hand and edge tools .....</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>5 835 503</b>	<b>N</b>	<b>X</b>	<b>N</b>	<b>N</b>
3322121	Mechanics' hand service tools .....	N	X	X	2 156 778	N	X	N	N
33221211	Mechanics' slip joint pliers .....	N	X	X	109 092	N	X	N	N
3322121101	Mechanics' slip joint pliers .....	8	X	X	14.8 109 092	14	X	8.5	50 340
33221212	Mechanics' solid joint pliers .....	N	X	X	260 775	N	X	N	N
3322121206	Mechanics' solid joint pliers .....	15	X	X	16.4 260 775	17	X	15.3	86 939
33221213	Other mechanics' hand service tools .....	N	X	X	1 083 903	N	X	N	N
3322121311	Mechanics' ball peen hammers .....	9	X	S	16 555	7	X	4.5	10 323
3322121351	Mechanics' screwdrivers .....	33	X	X	204 491	26	X	X	147 516
3322121356	Automobile jacks, mechanical (excluding hydraulic and pneumatic) .....	8	X	X	D	9	X	S	86 580
3322121361	Mechanics' tools for automotive use (excluding jacks, but including wheel or gear pullers, valve tools, body or fender tools, etc.) .....	33	X	X	239 018	29	X	X	102 530
3322121365	Tape measures .....	5	X	X	D	N	X	N	N
3322121399	Other mechanics' hand service tools (including blow torches) .....	62	X	X	487 001	78	X	X	490 467
33221214	Mechanics' wrenches .....	N	X	X	699 954	N	X	N	N
3322121416	Mechanics' socket wrenches, including sockets, drives (ratchet and other), extensions, etc., for hand-operated socket wrenches .....	21	X	X	337 602	24	X	X	357 165
3322121421	Mechanics' open-end and box wrenches .....	16	X	X	48 511	15	X	X	44 556
3322121426	Mechanics' torque wrenches .....	11	X	X	51 392	9	X	S	31 324
3322121431	Mechanics' adjustable wrenches, including pipe wrenches .....	13	X	X	9.2 122 390	11	X	7.1	73 788
3322121436	Mechanics' combination open-end and box wrenches .....	11	X	X	99 442	10	X	X	73 913
3322121444	All other mechanics' wrenches .....	16	X	X	40 617	21	X	S	55 452
3322121Y	Mechanics' hand service tools, nsk .....	N	X	X	3 054	N	X	X	N
3322121YWV	Mechanics' hand service tools, nsk .....	N	X	X	3 054	N	X	X	N
3322123	Edge tools, hand-operated .....	N	X	X	399 282	N	X	X	N
33221231	Other hand-operated edge tools (including agricultural and forestry edge handtools) .....	N	X	X	D	N	X	X	N
3322123101	Axes, adzes, hatchets, and chisels (hand-operated) .....	26	X	X	58 990	23	X	X	47 695
3322123106	Professional and craft edge handtools (palette knives, paperhanger knives, putty knives, scrapers, trimmers, etc.) .....	43	X	X	263 366	35	X	X	197 664
3322123111	Kitchen hand-operated edge tools (including nonelectric can openers, peelers, slicers, dicers, etc.) .....	5	X	X	D	6	X	X	6 932
3322123121	Other hand-operated edge tools (including agricultural and forestry edge handtools) .....	26	X	X	64 229	22	X	X	50 811
33221232	Hand clippers for animals .....	N	X	X	D	N	X	X	N
3322123216	Hand clippers for animals .....	2	X	X	D	N	X	X	N
3322123Y	Edge tools, hand-operated, nsk .....	N	X	X	-	N	X	X	N
3322123YWV	Edge tools, hand-operated, nsk .....	N	X	X	-	N	X	X	N
3322125	Dies and interchangeable cutting tools, for machines and power-driven handtools .....	N	X	X	837 252	N	X	X	595 439
33221251	Steel rule dies (except metal cutting), for machines and power-driven handtools .....	N	X	X	271 406	N	X	X	N
3322125101	Steel rule dies (except metal cutting), for machines and power-driven handtools .....	109	X	X	271 406	105	X	X	172 227
33221252	Other cutting dies, for use in cutting cloth, paper, leathers, etc. (excluding dies for cutting metal), for machines & power-driven handtools .....	N	X	X	243 399	N	X	X	N
3322125206	Other cutting dies, for use in cutting cloth, paper, leathers, etc. (excluding dies for cutting metal), for machines & power-driven handtools .....	80	X	X	243 399	75	X	X	190 099
33221253	All other woodcutting machine tools .....	N	X	X	308 001	N	X	X	N
3322125311	Veneer knives and chipper knives (except metal cutting), for machines and power-driven handtools .....	13	X	X	43 553	6	X	X	15 715
3322125316	All other machines knives .....	35	X	X	76 871	37	X	X	96 104
3322125321	Countersink, drill, and router bits for woodcutting .....	22	X	X	132 855	22	X	X	82 205
3322125333	All other woodcutting machine tools (including milling cutters) .....	20	X	X	54 722	24	X	X	37 990
3322125Y	Dies and interchangeable cutting tools, for machines and power-driven handtools, nsk .....	N	X	X	14 446	N	X	X	N
3322125YWV	Dies and interchangeable cutting tools, for machines and power-driven handtools, nsk .....	N	X	X	14 446	N	X	X	1 099

See footnotes at end of table.

**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332212</b>	<b>Hand and edge tools—Con.</b>								
3322127	Other handtools, nec .....	N	X	X	1 355 213	N	X	X	N
33221271	Other handtools (including woodworking and metal working files and rasps, including precision files, except edge tools) .....	N	X	X	D	N	X	X	N
3322127101	Shovels, spades, scoops, telegraph spoons, and scrapers .....	17	X	S	148 305	17	X	10.7	92 455
3322127111	Light forged hammers, less than 4 lb (excluding ball peen hammers) .....	16	X	P8.1	91 081	21	X	P10.0	73 947
3322127116	Heavy forged handtools, sledges (4 lb or more), picks, pick mattocks, and mauls .....	14	X	X	43 577	13	X	S	20 377
3322127121	Steel handtool goods (forks, hoes, rakes, weeders, etc.) .....	13	X	S	119 750	16	X	P17.9	103 691
3322127131	Soldering irons (electric) .....	10	X	S	29 297	7	X	S	36 637
3322127136	Clamps and vises (excluding machine tool accessories) .....	13	X	X	76 080	9	X	X	55 565
3322127141	Wheelbarrows .....	3	X	X	D	N	X	X	N
3322127199	Other handtools (including woodworking and metalworking files and rasps, including precision files, except edge tools) .....	143	X	X	815 339	115	X	X	529 305
33221272	Nonpowered lawnmowers .....	N	X	X	D	N	X	X	N
3322127226	Nonpowered lawnmowers .....	2	X	X	D	N	X	X	N
3322127Y	Other handtools, nec, nsk .....	N	X	X	1 199	N	X	X	N
3322127YV	Other handtools, nec, nsk .....	N	X	X	1 199	N	X	X	N
3322129	Precision measuring tools (inspection, quality control, tool room, and machinists') .....	N	X	X	761 923	N	X	X	N
33221291	Precision measuring tools (inspection, quality control, tool room, and machinists') .....	N	X	X	428 276	N	X	X	N
3322129101	Comparators (excluding optical) (inspection, quality control, tool room, and machinists' precision measuring tools) .....	8	X	X	8 438	9	X	X	4 932
3322129106	Fixture type, fixed size precision measuring limit gauges (American Gauge Design Type C58-61) (inspection, quality control, tool room, and machinists') .....	33	X	X	36 405	34	X	X	42 889
3322129111	Thread type, fixed size precision measuring limit gauges (American Gauge Design Type C58-61) (inspection, quality control, tool room, and machinists') .....	21	X	X	33 752	27	X	X	37 747
3322129116	Adjustable size precision measuring limit gauges .....	4	X	X	D	15	X	X	21 456
3322129121	Precision measuring gauge blocks .....	8	X	X	21 550	8	X	X	5 803
3322129126	Precision measuring dial indicators .....	16	X	X	33 410	7	X	X	23 583
3322129131	Precision measuring micrometers and calipers .....	8	X	X	44 360	7	X	X	34 858
3322129146	Other machinists' precision measuring tools (including dividers, gear checking and surface texture measuring machines) .....	31	X	X	102 033	31	X	X	72 331
3322129161	Industrial quality control laser systems and equipment .....	5	X	X	D	N	X	X	N
33221292	Pneumatic and electronic precision measuring gauges (manual and automatic) .....	N	X	X	73 187	N	X	X	N
3322129236	Pneumatic and electronic precision measuring gauges (manual and automatic) .....	20	X	X	73 187	16	X	X	62 026
33221293	Coordinate and contour precision measuring machines (inspection and gauging) .....	N	X	X	219 529	N	X	X	N
3322129341	Coordinate and contour precision measuring machines (inspection and gauging) .....	21	X	X	219 529	13	X	X	75 236
33221294	Parts and accessories for machinists' precision measuring tools (sold separately) .....	N	X	X	30 565	N	X	X	N
3322129451	Parts and accessories for machinists' precision measuring tools (sold separately) .....	18	X	X	30 565	14	X	X	18 125
3322129Y	Precision measuring tools (inspection, quality control, tool room, and machinists'), nsk .....	N	X	X	10 366	N	X	X	N
3322129YV	Precision measuring tools (inspection, quality control, tool room, and machinists'), nsk .....	N	X	X	10 366	N	X	X	N

See footnotes at end of table.

**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332212</b>	<b>Hand and edge tools—Con.</b>								
332212W	Hand and edge tool manufacturing, nsk, total .....	N	X	X	325 055	N	X	X	N
332212WY	Hand and edge tool manufacturing, nsk, total .....	N	X	X	325 055	N	X	X	N
332212WYWW	Hand and edge tool manufacturing, nsk, for nonadministrative-record establishments .....	N	X	X	149 026	N	X	X	N
332212WYWY	Hand and edge tool manufacturing, nsk, for administrative-record establishments .....	N	X	X	176 029	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3322121</b>	<b>MECHANICS' HAND SERVICE TOOLS</b>		
	<b>United States .....</b>	<b>2 156 778</b>	<b>N</b>
	California .....	63 559	N
	Connecticut .....	60 528	N
	Georgia .....	38 771	N
	Illinois .....	250 996	N
	Massachusetts .....	54 325	N
	Michigan .....	68 927	N
	Minnesota .....	152 835	N
	New York .....	74 582	N
	North Carolina .....	231 472	N
	Ohio .....	167 691	N
	Pennsylvania .....	110 659	N
	South Carolina .....	110 577	N
	Wisconsin .....	107 384	N
<b>3322123</b>	<b>EDGE TOOLS, HAND-OPERATED</b>		
	<b>United States .....</b>	<b>399 282</b>	<b>N</b>
	California .....	38 483	N
	Illinois .....	20 969	N
	Massachusetts .....	44 496	N
	Missouri .....	6 371	N
	New Jersey .....	29 787	N
	Pennsylvania .....	21 627	N
	Wisconsin .....	8 453	N
<b>3322125</b>	<b>DIES AND INTERCHANGEABLE CUTTING TOOLS, FOR MACHINES AND POWER-DRIVEN HANDTOOLS</b>		
	<b>United States .....</b>	<b>837 252</b>	<b>595 439</b>
	California .....	48 916	24 726
	Connecticut .....	5 208	4 443
	Georgia .....	27 187	18 498
	Illinois .....	82 050	56 446
	Indiana .....	48 532	45 474
	Kentucky .....	71 495	N
	Massachusetts .....	37 569	43 007
	Michigan .....	63 542	43 418
	Minnesota .....	35 457	13 193
	Missouri .....	53 160	34 926
	New Hampshire .....	4 663	3 653
	New Jersey .....	27 076	18 906
	New York .....	22 972	17 838
	North Carolina .....	46 315	36 472
	Ohio .....	93 854	51 056

See footnotes at end of table.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3322125</b>	<b>DIES AND INTERCHANGEABLE CUTTING TOOLS, FOR MACHINES AND POWER-DRIVEN HANDTOOLS—Con.</b>		
	Pennsylvania .....	33 829	29 454
	South Carolina .....	19 938	N
	Tennessee .....	14 602	12 615
	Texas .....	13 560	4 644
	Virginia .....	25 995	14 455
	Washington .....	4 523	4 096
	Wisconsin .....	14 146	30 911
<b>3322127</b>	<b>OTHER HANDTOOLS, NEC</b>		
	United States .....	<b>1 355 213</b>	<b>N</b>
	California .....	68 629	N
	Connecticut .....	149 884	N
	Illinois .....	138 833	N
	Iowa .....	13 513	N
	Kansas .....	25 632	N
	Massachusetts .....	32 298	N
	Michigan .....	14 784	N
	Minnesota .....	44 219	N
	New York .....	36 293	N
	North Carolina .....	9 095	N
	Ohio .....	86 445	N
	Pennsylvania .....	109 704	N
	South Carolina .....	80 343	N
	Tennessee .....	43 360	N
	Texas .....	4 872	N
	Washington .....	12 685	N
	Wisconsin .....	63 029	N
<b>3322129</b>	<b>PRECISION MEASURING TOOLS (INSPECTION, QUALITY CONTROL, TOOL ROOM, AND MACHINISTS')</b>		
	United States .....	<b>761 923</b>	<b>N</b>
	California .....	155 401	N
	Connecticut .....	21 258	N
	Illinois .....	27 611	N
	Michigan .....	138 421	N
	New York .....	98 862	N
	Ohio .....	91 347	N
	Pennsylvania .....	2 899	N

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332212</b>	<b>HAND &amp; EDGE TOOL MFG</b>				
33272203	Metal bolts, nuts, screws, washers, rivets, and other screw machine products .....	X	56 787	X	N
33200095	Other fabricated metal products (except forgings) .....	X	122 275	X	N
33151001	Iron and steel castings (rough and semifinished) .....	X	90 283	X	N
33152005	Aluminum and aluminum-base alloy castings (rough and semifinished) .....	X	19 152	X	N
33152003	Other nonferrous castings (rough and semifinished) .....	X	10 616	X	N
33211101	Iron and steel forgings .....	X	64 723	X	N
33120007	Steel bars, bar shapes, and plates (except castings, forgings, and fabricated metal products) .....	X	326 051	X	N
33120073	Steel sheet, strip, and tin mill products .....	X	154 504	X	N
33120025	Steel wire and wire products .....	X	24 962	X	N
33120027	All other steel shapes and forms (except castings, forgings, and fabricated metal products) .....	X	35 296	X	N
33142111	Copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	3 845	X	N
33100039	Aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	19 201	X	N
33100083	Other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	2 282	X	N
32100047	Wood parts, including handles .....	X	46 005	X	N
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc. ....	X	31 341	X	N
32610003	Plastics products (film, sheet, rod, tube, and fabricated shapes, including parts, handles, grips, etc.) .....	X	84 689	X	N
32220017	Paper and paperboard containers, including shipping sacks and other paper packaging supplies .....	X	61 620	X	N
00970099	All other materials and components, parts, containers, and supplies .....	X	442 834	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	225 779	X	N

**Table 7. Materials Consumed by Kind: 1997 and 1992—Con.**

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: <sup>p</sup> 10 to 19 percent estimated; <sup>q</sup> 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It



includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332212 HAND AND EDGE TOOL MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing nonpowered hand and edge tools (except saws).

The data published with NAICS code 332212 include the following SIC industries:

- 3423 Hand and edge tools, n.e.c.
- 3523 Farm machinery and equipment (pt)
- 3524 Lawn and garden equipment (pt)
- 3545 Machine tool accessories (pt)
- 3699 Electrical equipment and supplies, n.e.c. (pt)
- 3799 Transportation equipment, n.e.c. (pt)
- 3999 Manufacturing industries, n.e.c. (pt)

This definition comes from the 1997 NAICS Manual. However, for this industry, the 1997 Economic Census – Manufacturing did not fully implement the conversion to NAICS. Data for NAICS industry 332212 include establishments primarily engaged in the manufacture of wheelbarrows or quality control laser equipment but do not include establishments primarily engaged in the manufacture of tool-type shears or fish wire, an electrical wiring tool. The NAICS definitions will be fully implemented with the 2002 Economic Census.

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.



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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.











1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3329991	34971	34971	332999AYWV	3499500	3499500	332999GYWV pt...	3999900 pt	3999900 pt
3329991101	3497132	3497132	332999G pt	32918 pt	32918 pt	332999W pt	32910 pt	32910 pt
3329991106	3497133	3497133	332999G pt	34323 pt	34323 pt	332999W pt	34320 pt	34320 pt
3329991111	3497137	3497137	332999G pt	34945 pt	34945 pt	332999W pt	34940 pt	34940 pt
3329991YVV	3497100	3497100	332999G pt	34998 pt	34998 pt	332999W pt	34970 pt	34970 pt
3329993	34973	34973	332999G pt	34998 pt	34998 pt	332999W pt	34990 pt	34990 pt
3329993101	3497352	3497352	332999G pt	35373 pt	35373 pt	332999W pt	34990 pt	34990 pt
3329993106	3497354	3497354	332999G pt	39999 pt	39999 pt	332999W pt	35370 pt	35370 pt
3329993111	3497358	3497358	332999G101	3499811	3499811	332999W pt	35990 pt	35990 pt
3329993YVV	3497300	3497300	332999G106	3499819	3499819	332999W pt	39990 pt	39990 pt
3329994	35994 pt	35994 pt	332999G189	3494571	3494571	332999W pt	3291000 pt	3291000 pt
3329994101	3599411	3599411	332999G301	3499829	3499829	332999WYVVV pt...	3432000 pt	3432000 pt
3329994106	3599413	3599413	332999G303	3499839	3499839	332999WYVVV pt...	3494000 pt	3494000 pt
3329994111	3599415	3599415	332999G305	3537331	3537331	332999WYVVV pt...	3497000 pt	3497000 pt
3329994116	3599416	3599416	332999G306 pt	3999991 pt	3999913 pt	332999WYVVV pt...	3499000 pt	3499000 pt
3329994121	3599425	3599425	332999G306 pt	3999991 pt	3999944 pt	332999WYVVV pt...	3537000 pt	3537000 pt
3329994YVV	3599400 pt	3599400 pt	332999G306 pt	3999991 pt	3999999 pt	332999WYVVV pt...	3599000 pt	3599000 pt
3329997	34992	34992	332999G313	3291831	3291831	332999WYVVV pt...	3999000 pt	3999000 pt
3329997101	3499211	3499211	332999G316	3291835	3291890 pt	332999WYVVV pt...	3291002 pt	3291002 pt
3329997106	3499213	3499213	332999G399 pt	3432329	3432332 pt	332999WYVVV pt...	3432002 pt	3432002 pt
3329997YVV	3499200	3499200	332999G399 pt	3499898	3499899 pt	332999WYVVV pt...	3494002 pt	3494002 pt
3329999	34993	34993	332999GYWV pt...	3291800 pt	3291800 pt	332999WYVVV pt...	3497002 pt	3497002 pt
3329999100	3499300	3499300	332999GYWV pt...	3432300 pt	3432300 pt	332999WYVVV pt...	3499002 pt	3499002 pt
332999A	34995	34995	332999GYWV pt...	3494500 pt	3494500 pt	332999WYVVV pt...	3537002 pt	3537002 pt
332999A101	3499511	3499511	332999GYWV pt...	3499800 pt	3499800 pt	332999WYVVV pt...	3599002 pt	3599002 pt
332999A106	3499521	3499521	332999GYWV pt...	3537300 pt	3537300 pt	332999WYVVV pt...	3999002 pt	3999002 pt
332999A111	3499531	3499531						
332999A116	3499539	3499539						



# Saw Blade and Handsaw Manufacturing

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



# U S C E N S U S B U R E A U

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coordination of the publication process. **Kim Credito**, **Patrick Duck**, **Chip Murph**, **Wanda Sledd**, and **Veronica White** provided primary staff assistance.

The Economic Planning and Coordination Division, **Lawrence A. Blum**, Assistant Chief for Collection Activities and **Shirin A. Ahmed**, Assistant Chief for Post-Collection Processing, assisted by **Dennis Shoemaker**, Chief, Post-Collection Census Processing Branch, **Brandy Yarbrough**, Section Chief, **Sheila Proudfoot**, **Richard Williamson**, **Andrew W. Hait**, and **Jennifer E. Lins**, was responsible for developing the systems and procedures for data collection, editing, review, correction and dissemination

The staff of the National Processing Center, **Judith N. Petty**, Chief, performed mailout preparation and receipt operations, clerical and analytical review activities, data keying, and geocoding review.

The Geography Division staff developed geographic coding procedures and associated computer programs.

The Economic Statistical Methods and Programming Division, **Charles P. Pautler Jr.**, Chief, developed and coordinated the computer processing systems. **Martin S. Harahush**, Assistant Chief for Quinquennial Programs, assisted by **Barbara Lambert** and **Christina Arledge** were responsible for design and implementation of the computer systems. **Gary T. Sheridan**, Chief, Manufacturing and Construction Branch, **Lori A. Guido** and **Roy A. Smith**, Section Chiefs, supervised the preparation of the computer programs.

Computer Services Division, **Debra Williams**, Chief, performed the computer processing.

The staff of the Administrative and Customer Services Division, **Walter C. Odom**, Chief, performed planning, design, composition, editorial review, and printing planning and procurement for publications, Internet products, and report forms. **Cynthia G. Brooks** provided publication coordination and editing.

# Saw Blade and Handsaw Manufacturing

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division



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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332213</b>	<b>Saw blade &amp; handsaw mfg . . . . .</b>	<b>167</b>	<b>176</b>	<b>9 149</b>	<b>300 538</b>	<b>6 614</b>	<b>13 796</b>	<b>180 091</b>	<b>880 795</b>	<b>557 214</b>	<b>1 452 516</b>	<b>67 237</b>
342500	Hand saws & saw blades . . . . .	N	176	9 149	300 538	6 614	13 796	180 091	880 795	557 214	1 452 516	67 237

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.  
<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332213, SAW BLADE &amp; HANDSAW MFG</b>												
United States . . . . .	-	176	67	9 149	300 538	6 614	13 796	180 091	880 795	557 214	1 452 516	67 237
California . . . . .	-	20	7	552	18 915	356	674	9 269	53 223	45 506	99 244	4 390
Florida . . . . .	-	8	3	163	4 416	112	207	2 387	11 710	9 293	21 410	1 384
Illinois . . . . .	2	10	2	337	9 517	266	602	6 400	20 103	13 692	33 745	3 134
Mississippi . . . . .	-	4	2	181	5 799	140	310	3 670	11 811	9 221	21 899	511
New York . . . . .	-	12	4	786	19 786	607	1 476	12 613	58 226	68 336	140 423	5 874
Ohio . . . . .	-	9	3	431	13 022	349	741	9 464	45 467	19 043	63 770	4 622
Oregon . . . . .	-	10	5	1 138	42 382	816	1 573	23 676	149 027	103 329	251 763	4 253
Texas . . . . .	1	9	2	303	8 709	225	450	5 374	20 274	13 728	35 696	1 082

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.



**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332213, SAW BLADE &amp; HANDSAW MFG</b>		<b>332213, SAW BLADE &amp; HANDSAW MFG—Con.</b>	
Companies <sup>1</sup> .....	number.. 167	Value added .....	\$.1,000.. 880 795
All establishments .....	number.. 176	Total inventories, beginning of year .....	\$.1,000.. 238 614
Establishments with 1 to 19 employees .....	number.. 109	Finished goods inventories, beginning of year .....	\$.1,000.. 129 036
Establishments with 20 to 99 employees .....	number.. 43	Work-in-process inventories, beginning of year .....	\$.1,000.. 51 269
Establishments with 100 employees or more .....	number.. 24	Materials and supplies inventories, beginning of year .....	\$.1,000.. 58 309
All employees .....	number.. 9 149	Total inventories, end of year .....	\$.1,000.. 231 236
Total compensation <sup>2</sup> .....	\$.1,000.. 384 097	Finished goods inventories, end of year .....	\$.1,000.. 112 513
Annual payroll .....	\$.1,000.. 300 538	Work-in-process inventories, end of year .....	\$.1,000.. 53 285
Total fringe benefits .....	\$.1,000.. 83 559	Materials and supplies inventories, end of year .....	\$.1,000.. 65 438
Production workers, average for year .....	number.. 6 614	Gross book value of total assets at beginning of year .....	\$.1,000.. 548 046
Production workers on March 12 .....	number.. 6 580	Total capital expenditures (new and used) .....	\$.1,000.. 67 237
Production workers on May 12 .....	number.. 6 545	Capital expenditures for buildings and other structures	
Production workers on August 12 .....	number.. 6 625	(new and used) .....	\$.1,000.. 6 706
Production workers on November 12 .....	number.. 6 706	Capital expenditures for machinery and equipment (new	
Production-worker hours .....	1,000.. 13 796	and used) .....	\$.1,000.. 60 531
Production-worker wages .....	\$.1,000.. 180 091	Total retirements <sup>2</sup> .....	\$.1,000.. 23 928
Total cost of materials .....	\$.1,000.. 557 214	Gross book value of total assets at end of year .....	\$.1,000.. 591 355
Cost of materials, parts, containers, etc., consumed .....	\$.1,000.. 381 756	Total depreciation during year <sup>2</sup> .....	\$.1,000.. 41 153
Cost of resales .....	\$.1,000.. 146 446	Total rental payments <sup>2</sup> .....	\$.1,000.. 10 750
Cost of fuels .....	\$.1,000.. 2 219	Buildings and other structures rental payments <sup>2</sup> .....	\$.1,000.. 5 644
Cost of purchased electricity .....	\$.1,000.. 16 529	Machinery and equipment rental payments <sup>2</sup> .....	\$.1,000.. 5 106
Cost of contract work .....	\$.1,000.. 10 264	Cost of purchased services for the repair of buildings and other	
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 250 225	structures <sup>3</sup> .....	\$.1,000.. 4 013
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. -	Response coverage ratio <sup>4</sup> .....	percent.. 99
Total value of shipments .....	\$.1,000.. 1 452 516	Cost of purchased services for the repair of machinery and	
Primary products value of shipments .....	\$.1,000.. 1 110 244	equipment <sup>3</sup> .....	\$.1,000.. 20 259
Secondary products value of shipments .....	\$.1,000.. 138 115	Response coverage ratio <sup>4</sup> .....	percent.. 99
Total miscellaneous receipts .....	\$.1,000.. 204 157	Cost of purchased communications services <sup>3</sup> .....	\$.1,000.. 5 859
Value of resales .....	\$.1,000.. 188 735	Response coverage ratio <sup>4</sup> .....	percent.. 99
Contract receipts .....	\$.1,000.. 6 752	Cost of purchased legal services <sup>3</sup> .....	\$.1,000.. 3 267
Other miscellaneous receipts .....	\$.1,000.. 8 670	Response coverage ratio <sup>4</sup> .....	percent.. 99
Primary products specialization ratio .....	percent.. 88	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$.1,000.. 1 875
Value of primary products shipments made in all industries .....	\$.1,000.. 1 283 653	Response coverage ratio <sup>4</sup> .....	percent.. 99
Value of primary products shipments made in this industry .....	\$.1,000.. 1 110 244	Cost of purchased advertising services <sup>3</sup> .....	\$.1,000.. 31 708
Value of primary products shipments made in other		Response coverage ratio <sup>4</sup> .....	percent.. 99
industries .....	\$.1,000.. 173 409	Cost of purchased software and other data processing	
Coverage ratio .....	percent.. 86	services <sup>3</sup> .....	\$.1,000.. 3 336
		Response coverage ratio <sup>4</sup> .....	percent.. 99
		Cost of purchased refuse removal (including hazardous waste)	
		services <sup>3</sup> .....	\$.1,000.. 1 577
		Response coverage ratio <sup>4</sup> .....	percent.. 99

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332213, SAW BLADE &amp; HANDSAW MFG</b>												
<b>All establishments .....</b>	-	<b>176</b>	<b>67</b>	<b>9 149</b>	<b>300 538</b>	<b>6 614</b>	<b>13 796</b>	<b>180 091</b>	<b>880 795</b>	<b>557 214</b>	<b>1 452 516</b>	<b>67 237</b>
Establishments with 1 to 4 employees .....	9	54	-	121	3 164	95	170	2 222	7 811	4 694	12 482	512
Establishments with 5 to 9 employees .....	7	26	-	162	5 143	128	246	3 361	13 860	8 832	22 596	857
Establishments with 10 to 19 employees .....	4	29	-	391	12 053	293	536	7 314	30 178	21 556	51 900	1 896
Establishments with 20 to 49 employees .....	1	31	31	967	31 930	675	1 326	18 337	67 108	51 005	117 183	4 998
Establishments with 50 to 99 employees .....	-	12	12	784	23 839	514	1 050	13 518	61 783	39 135	102 418	6 741
Establishments with 100 to 249 employees .....	-	14	14	2 409	75 231	1 711	3 558	43 113	205 381	132 152	344 330	15 427
Establishments with 250 to 499 employees .....	-	8	8	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	84	-	423	11 388	339	598	7 992	28 169	16 924	45 012	1 850

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332213</b>	<b>Saw blade &amp; handsaw mfg .....</b>	<b>176</b>	<b>9 149</b>	<b>300 538</b>	<b>6 614</b>	<b>13 796</b>	<b>180 091</b>	<b>880 795</b>	<b>557 214</b>	<b>1 452 516</b>	<b>67 237</b>

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332213</b>	<b>Saw blades and handsaws</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>1 283 653</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>719 205</b>
3322130	Handsaws, saw blades (hand and power), and saw accessories .....	N	X	X	1 283 653	N	X	X	719 205
33221301	Woodworking power saw blades and accessories .....	N	X	X	549 491	N	X	X	N
3322130101	Power circular saw blades for woodworking, solid tooth .....	20	X	X	86 809	12	X	X	42 621
3322130106	Power circular saw blades for woodworking, inserted tooth .....	19	X	X	111 096	19	X	X	77 578
3322130111	Power band saw blades for woodworking .....	19	X	X	66 221	14	X	X	38 291
3322130116	Teeth for inserted power woodworking saws, sold separately .....	6	X	X	24 474	5	X	X	20 204
3322130122	All other woodworking power saw blades (scroll, jig, etc.) .....	22	X	X	260 891	17	X	S	105 776
33221302	Metalworking and other power saw blades and accessories .....	N	X	X	506 952	N	X	X	N
3322130226	Power circular saw blades for metalworking (including metal teeth and cutting segments sold separately) .....	22	X	X	44 622	19	X	X	49 873
3322130231	Power hack saw blades for metalworking .....	4	X	S	2 026	8	X	5.3	6 572
3322130236	Power band saw blades for metalworking (flexible back, spring temper metal cutting, and high-speed metal cutting) .....	15	X	X	208 267	17	X	S	146 320
3322130244	Other metalworking power saw blades (saber, reciprocating, etc.) .....	15	X	X	89 673	12	X	X	50 634
3322130255	All other power saw blades .....	28	X	X	162 364	22	X	X	83 896
33221303	All other hand-operated saws .....	N	X	X	184 957	N	X	X	N
3322130361	Hand-operated hacksaws .....	12	X	S	36 431	12	X	P27.3	18 369
3322130365	Hand-operated carpenter crosscut saws and ripsaws .....	4	X	P4.0	21 269	4	X	P4.0	22 631
3322130377	Other handsaws (heavy handsaws, crosscut, buck, miter, coping, pruning, compass, etc., including frames and blades) .....	17	X	X	127 257	13	X	X	30 683
3322130Y	Saw blades and handsaws, nsk .....	N	X	X	42 253	N	X	X	N
3322130YWW	Saw blades and handsaws, nsk, for nonadministrative-record establishments .....	N	X	X	2 968	N	X	X	9 925
3322130YWY	Saw blades and handsaws, nsk, for administrative-record establishments .....	N	X	X	39 285	N	X	X	15 833

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332213</b>	<b>SAW BLADE &amp; HANDSAW MFG</b>				
33272203	Metal bolts, nuts, screws, washers, rivets, and other screw machine products	X	1 551	X	1 551
33200095	Other fabricated metal products (except forgings)	X	22 103	X	9 468
33151001	Iron and steel castings (rough and semifinished)	X	13 037	X	3 787
33152005	Aluminum and aluminum-base alloy castings (rough and semifinished)	X	2 832	X	D
33152003	Other nonferrous castings (rough and semifinished)	X	1 922	X	7 405
33211101	Iron and steel forgings	X	D	X	N
33120007	Steel bars, bar shapes, and plates (except castings, forgings, and fabricated metal products)	X	41 122	X	10 336
33120073	Steel sheet, strip, and tin mill products	X	105 004	X	75 154
33120025	Steel wire and wire products	X	16 553	X	5 279
33120027	All other steel shapes and forms (except castings, forgings, and fabricated metal products)	X	51 132	X	10 116
33142111	Copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products)	X	D	X	D
33100039	Aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products)	X	D	X	D
33100083	Other nonferrous shapes and forms (except castings, forgings, and fabricated metal products)	X	1 381	X	D
32100047	Wood parts, including handles	X	2 122	X	2 193
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc.	X	210	X	1 891
32610003	Plastics products (film, sheet, rod, tube, and fabricated shapes, including parts, handles, grips, etc.)	X	3 789	X	5 323
32220017	Paper and paperboard containers, including shipping sacks and other paper packaging supplies	X	16 118	X	16 371
00970099	All other materials and components, parts, containers, and supplies	X	80 316	X	82 224
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	22 172	X	18 646

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.



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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332213 SAW BLADE AND HANDSAW MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in (1) manufacturing nonpowered handsaws and/or (2) manufacturing saw blades, all types (including those for power sawing machines).

The data published with NAICS code 332213 include the following SIC industry:

3425 Saw blades and handsaws

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic



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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.











1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3329991	34971	34971	332999AYWV	3499500	3499500	332999GYWV pt...	3999900 pt	3999900 pt
3329991101	3497132	3497132	332999G pt	32918 pt	32918 pt	332999W pt	32910 pt	32910 pt
3329991106	3497133	3497133	332999G pt	34323 pt	34323 pt	332999W pt	34320 pt	34320 pt
3329991111	3497137	3497137	332999G pt	34945 pt	34945 pt	332999W pt	34940 pt	34940 pt
3329991YWV	3497100	3497100	332999G pt	34998 pt	34998 pt	332999W pt	34970 pt	34970 pt
3329993	34973	34973	332999G pt	35373 pt	35373 pt	332999W pt	34990 pt	34990 pt
3329993101	3497352	3497352	332999G pt	39999 pt	39999 pt	332999W pt	35370 pt	35370 pt
3329993106	3497354	3497354	332999G101	3499811	3499811	332999W pt	35990 pt	35990 pt
3329993111	3497358	3497358	332999G106	3499819	3499819	332999W pt	39990 pt	39990 pt
3329993YWV	3497300	3497300	332999G189	3494571	3494571	332999WYWWW pt...	3291000 pt	3291000 pt
3329994	35994 pt	35994 pt	332999G301	3499829	3499829	332999WYWWW pt...	3432000 pt	3432000 pt
3329994101	3599411	3599411	332999G303	3499839	3499839	332999WYWWW pt...	3494000 pt	3494000 pt
3329994106	3599413	3599413	332999G305	3537331	3537331	332999WYWWW pt...	3497000 pt	3497000 pt
3329994111	3599415	3599415	332999G306 pt	3999991 pt	3999913 pt	332999WYWWW pt...	3499000 pt	3499000 pt
3329994116	3599416	3599416	332999G306 pt	3999991 pt	3999942 pt	332999WYWWW pt...	3499000 pt	3499000 pt
3329994121	3599425	3599425	332999G306 pt	3999991 pt	3999944 pt	332999WYWWW pt...	3537000 pt	3537000 pt
3329994YWV	3599400 pt	3599400 pt	332999G306 pt	3999991 pt	3999999 pt	332999WYWWW pt...	3599000 pt	3599000 pt
3329997	34992	34992	332999G313	3291831	3291831	332999WYWWW pt...	3999000 pt	3999000 pt
3329997101	3499211	3499211	332999G316	3291835	3291890 pt	332999WYWWW pt...	3291002 pt	3291002 pt
3329997106	3499213	3499213	332999G399 pt	3432329	3432332 pt	332999WYWWW pt...	3432002 pt	3432002 pt
3329997YWV	3499200	3499200	332999G399 pt	3499898	3499899 pt	332999WYWWW pt...	3494002 pt	3494002 pt
3329999	34993	34993	332999GYWV pt...	3291800 pt	3291800 pt	332999WYWWW pt...	3497002 pt	3497002 pt
3329999100	3499300	3499300	332999GYWV pt...	3432300 pt	3432300 pt	332999WYWWW pt...	3499002 pt	3499002 pt
332999A	34995	34995	332999GYWV pt...	3494500 pt	3494500 pt	332999WYWWW pt...	3537002 pt	3537002 pt
332999A101	3499511	3499511	332999GYWV pt...	3499800 pt	3499800 pt	332999WYWWW pt...	3599002 pt	3599002 pt
332999A106	3499521	3499521	332999GYWV pt...	3537300 pt	3537300 pt	332999WYWWW pt...	3999002 pt	3999002 pt
332999A111	3499531	3499531						
332999A116	3499539	3499539						



# Kitchen Utensil, Pot, and Pan Manufacturing

1997

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## 1997 Economic Census

*Manufacturing*

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# Kitchen Utensil, Pot, and Pan Manufacturing

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**

Under Secretary for  
Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were



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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332214</b>	<b>Kitchen utensil, pot, &amp; pan mfg</b>	<b>70</b>	<b>77</b>	<b>7 724</b>	<b>229 263</b>	<b>5 894</b>	<b>11 969</b>	<b>145 130</b>	<b>783 476</b>	<b>588 721</b>	<b>1 370 914</b>	<b>29 013</b>
346920	Metal stampings, n.e.c. (pt) . . . . .	N	77	7 724	229 263	5 894	11 969	145 130	783 476	588 721	1 370 914	29 013

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332214, KITCHEN UTENSIL, POT, &amp; PAN MFG</b>												
<b>United States</b> . . . . .	-	<b>77</b>	<b>46</b>	<b>7 724</b>	<b>229 263</b>	<b>5 894</b>	<b>11 969</b>	<b>145 130</b>	<b>783 476</b>	<b>588 721</b>	<b>1 370 914</b>	<b>29 013</b>
California . . . . .	-	6	2	141	3 917	92	140	1 596	6 367	8 322	14 804	193
Illinois . . . . .	2	5	5	1 033	29 368	816	1 587	19 420	108 912	80 190	183 472	3 189
New York . . . . .	4	6	6	343	7 829	246	514	4 850	12 432	10 660	23 242	597
Ohio . . . . .	-	7	5	861	25 041	554	1 194	13 874	140 977	112 023	245 979	5 569
Wisconsin . . . . .	-	9	9	3 050	99 874	2 372	4 867	65 902	354 714	197 301	563 907	8 103

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332214, KITCHEN UTENSIL, POT, &amp; PAN MFG</b>		<b>332214, KITCHEN UTENSIL, POT, &amp; PAN MFG— Con.</b>	
Companies <sup>1</sup> .....	70	Value added .....	\$1,000.. 783 476
All establishments .....	77	Total inventories, beginning of year .....	\$1,000.. 230 512
Establishments with 1 to 19 employees .....	31	Finished goods inventories, beginning of year .....	\$1,000.. 96 125
Establishments with 20 to 99 employees .....	28	Work-in-process inventories, beginning of year .....	\$1,000.. 45 759
Establishments with 100 employees or more .....	18	Materials and supplies inventories, beginning of year .....	\$1,000.. 88 628
All employees .....	7 724	Total inventories, end of year .....	\$1,000.. 222 385
Total compensation <sup>2</sup> .....	292 994	Finished goods inventories, end of year .....	\$1,000.. 96 668
Annual payroll .....	229 263	Work-in-process inventories, end of year .....	\$1,000.. 46 499
Total fringe benefits .....	63 731	Materials and supplies inventories, end of year .....	\$1,000.. 79 218
Production workers, average for year .....	5 894	Gross book value of total assets at beginning of year .....	\$1,000.. 401 260
Production workers on March 12 .....	5 729	Total capital expenditures (new and used) .....	\$1,000.. 29 013
Production workers on May 12 .....	5 864	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 3 544
Production workers on August 12 .....	6 015	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 25 469
Production workers on November 12 .....	5 968	Total retirements <sup>2</sup> .....	\$1,000.. 9 816
Production-worker hours .....	11 969	Gross book value of total assets at end of year .....	\$1,000.. 420 457
Production-worker wages .....	145 130	Total depreciation during year <sup>2</sup> .....	\$1,000.. 26 335
Total cost of materials .....	\$1,000.. 588 721	Total rental payments <sup>2</sup> .....	\$1,000.. 7 546
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 479 714	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 4 111
Cost of resales .....	\$1,000.. 65 994	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 3 435
Cost of fuels .....	\$1,000.. 8 080	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 2 519
Cost of purchased electricity .....	\$1,000.. 12 101	Response coverage ratio <sup>4</sup> .....	percent.. 82
Cost of contract work .....	\$1,000.. 22 832	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 14 365
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 206 096	Response coverage ratio <sup>4</sup> .....	percent.. 82
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 2 928
Total value of shipments .....	\$1,000.. 1 370 914	Response coverage ratio <sup>4</sup> .....	percent.. 82
Primary products value of shipments .....	\$1,000.. 1 192 147	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 1 129
Secondary products value of shipments .....	\$1,000.. 57 229	Response coverage ratio <sup>4</sup> .....	percent.. 82
Total miscellaneous receipts .....	\$1,000.. 121 538	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 994
Value of resales .....	\$1,000.. 106 937	Response coverage ratio <sup>4</sup> .....	percent.. 82
Contract receipts .....	\$1,000.. D	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 8 875
Other miscellaneous receipts .....	\$1,000.. D	Response coverage ratio <sup>4</sup> .....	percent.. 82
Primary products specialization ratio .....	percent.. 95	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 1 099
Value of primary products shipments made in all industries .....	\$1,000.. 1 353 014	Response coverage ratio <sup>4</sup> .....	percent.. 82
Value of primary products shipments made in this industry .....	\$1,000.. 1 192 147	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 911
Value of primary products shipments made in other industries .....	\$1,000.. 160 867	Response coverage ratio <sup>4</sup> .....	percent.. 82
Coverage ratio .....	percent.. 88		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332214, KITCHEN UTENSIL, POT, &amp; PAN MFG</b>												
<b>All establishments .....</b>	-	<b>77</b>	<b>46</b>	<b>7 724</b>	<b>229 263</b>	<b>5 894</b>	<b>11 969</b>	<b>145 130</b>	<b>783 476</b>	<b>588 721</b>	<b>1 370 914</b>	<b>29 013</b>
Establishments with 1 to 4 employees .....	9	12	-	21	516	18	23	344	1 033	887	1 919	77
Establishments with 5 to 9 employees .....	3	12	-	84	2 887	65	103	1 631	5 189	3 271	8 401	664
Establishments with 10 to 19 employees .....	-	7	-	113	3 560	76	126	1 493	5 006	8 440	13 455	D
Establishments with 20 to 49 employees .....	-	12	12	398	9 550	266	476	5 824	23 264	28 746	55 090	758
Establishments with 50 to 99 employees .....	-	16	16	1 088	26 752	803	1 606	16 084	68 918	77 127	146 420	2 734
Establishments with 100 to 249 employees .....	-	9	9	1 269	40 330	1 010	1 937	24 288	129 721	110 291	233 356	10 911
Establishments with 250 to 499 employees .....	1	5	5	1 902	54 526	1 459	2 993	37 062	238 708	150 472	381 019	7 216
Establishments with 500 to 999 employees .....	-	3	3	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	16	-	70	1 265	58	68	842	2 534	2 174	4 704	187

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332214</b>	<b>Kitchen utensil, pot, &amp; pan mfg .....</b>	<b>77</b>	<b>7 724</b>	<b>229 263</b>	<b>5 894</b>	<b>11 969</b>	<b>145 130</b>	<b>783 476</b>	<b>588 721</b>	<b>1 370 914</b>	<b>29 013</b>
3322141	Stamped and spun utensils, cooking and kitchen, aluminum .....	36	4 258	128 067	3 154	6 311	81 232	474 918	334 164	816 817	15 811
3322143	Stamped and spun utensils, cooking and kitchen, except aluminum .....	22	3 384	99 542	2 672	5 576	62 797	305 245	251 715	547 947	12 957



**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332214</b>	<b>Kitchen utensils, pots, and pans .....</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>1 353 014</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3322141	Stamped and spun utensils, cooking and kitchen, aluminum .....	N	X	X	785 955	N	X	X	541 323
33221411	Top of range household stamped and spun aluminum utensils (items generally used directly on top of source of heat), including pressure cookers .....	N	X	X	412 383	N	X	X	N
3322141111	Top of range household stamped and spun aluminum utensils (items generally used directly on top of source of heat), including pressure cookers .....	16	X	X	412 383	18	X	X	264 259
33221412	Other stamped and spun aluminum cooking and kitchen utensils, including commercial and hospital .....	N	X	X	373 572	N	X	X	N
3322141221	Bakeware, pantryware, and miscellaneous household stamped and spun aluminum utensils .....	32	X	X	275 036	21	X	X	189 627
3322141231	Camping and outdoor stamped and spun aluminum cooking equipment .....	13	X	X	22 534	7	X	X	8 479
3322141241	Other stamped and spun aluminum cooking and kitchen utensils, including commercial and hospital .....	18	X	X	76 002	17	X	X	66 930
3322141Y	Stamped and spun utensils, cooking and kitchen, aluminum, nsk .....	N	X	X	-	N	X	X	N
3322141YVW	Stamped and spun utensils, cooking and kitchen, aluminum, nsk .....	N	X	X	-	N	X	X	12 028
3322143	Stamped and spun utensils, cooking and kitchen, except aluminum .....	N	X	X	562 185	N	X	X	448 448
33221431	Top of range household stamped and spun stainless steel utensils (items generally used directly on top of source of heat) .....	N	X	X	306 128	N	X	X	N
3322143101	Top of range household stamped and spun stainless steel utensils (items generally used directly on top of source of heat) .....	13	X	X	306 128	14	X	X	235 065
33221432	Other stamped and spun cooking and kitchen utensils (including copper and vitreous enamel) .....	N	X	X	251 184	N	X	X	N
3322143211	Bakeware, pantryware, and miscellaneous household stamped and spun stainless steel utensils .....	5	X	X	1 364	7	X	X	26 033
3322143221	Other stamped and spun stainless steel cooking and kitchen utensils, including commercial, hospital, and outdoor cooking equipment .....	31	X	X	101 915	21	X	X	104 416
3322143231	Tinware (including household, commercial, hospital, and outdoor cooking equipment) .....	8	X	X	108 172	N	X	X	N
3322143241	Other stamped and spun cooking and kitchen utensils (including copper and vitreous enamel) .....	16	X	X	39 733	N	X	X	N
3322143Y	Stamped and spun utensils, cooking and kitchen, except aluminum, nsk .....	N	X	X	4 873	N	X	X	N
3322143YVW	Stamped and spun utensils, cooking and kitchen, except aluminum, nsk .....	N	X	X	4 873	N	X	X	-
332214W	Metal stampings, nec, nsk, total .....	N	X	X	4 874	N	X	X	N
332214WY	Metal stampings, nec, nsk, total .....	N	X	X	4 874	N	X	X	N
332214WYVW	Metal stampings, nec, nsk, for nonadministrative-record establishments .....	N	X	X	277	N	X	X	N
332214WYVY	Metal stampings, nec, nsk, for administrative-record establishments .....	N	X	X	4 597	N	X	X	N

# Additional information is available for this item: see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3322141</b>	<b>STAMPED AND SPUN UTENSILS, COOKING AND KITCHEN, ALUMINUM</b>		
	<b>United States</b> .....	<b>785 955</b>	<b>541 323</b>
	California .....	12 064	11 538
	Georgia .....	7 556	N
	Illinois .....	35 074	N
	Kentucky .....	18 240	N
	New York .....	10 487	3 457
<b>3322143</b>	<b>STAMPED AND SPUN UTENSILS, COOKING AND KITCHEN, EXCEPT ALUMINUM</b>		
	<b>United States</b> .....	<b>562 185</b>	<b>448 448</b>
	Illinois .....	109 500	122 413
	New York .....	12 854	N
	Wisconsin .....	233 136	150 445

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332214</b>	<b>KITCHEN UTENSIL, POT, &amp; PAN MFG</b>				
33272203	Metal bolts, nuts, screws, washers, rivets, and other screw machine products .....	X	7 898	X	N
33200095	Other fabricated metal products (except forgings) .....	X	44 104	X	N
33151001	Iron and steel castings (rough and semifinished) .....	X	D	X	N
33152011	Nonferrous (aluminum, copper, etc.) castings (rough and semifinished) .....	X	4 113	X	N
33210001	Forgings .....	X	D	X	N
33120071	Steel bars and bar shapes (except castings, forgings, and fabricated metal products) .....	X	111	X	N
33120017	Steel sheet and strip, including tin plate .....,1,000 s tons..	S	56 741	X	N
33120079	Steel plate .....	X	7 560	X	N
33120025	Steel wire and wire products .....	X	2 206	X	N
33120013	Steel tinplate, tin free steel, terneplate, and blackplate .....,1,000 s tons..	D	D	X	N
33120027	All other steel shapes and forms (except castings, forgings, and fabricated metal products) .....	X	19 279	X	N
33142111	Copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	N
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing .....	X	88 457	X	N
33131600	Aluminum and aluminum-base alloy extruded shapes, including extruded rod, bar, pipe, tube, etc. ....	X	D	X	N
33100049	Other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	56 716	X	N
33100083	Other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	N
32521105	Plastics resins consumed in the form of granules, pellets, powders, liquids, etc. ....	X	2 734	X	N
32551003	Paints, varnishes, lacquers, stains, shellacs, japans, enamels, and allied products .....	X	1 321	X	N
32500051	All other chemicals and allied products .....	X	10 113	X	N
32610013	Plastics products consumed in the form of sheets, rods, tubes, film, and other shapes .....	X	7 401	X	N
32221001	Paperboard containers, boxes, and corrugated paperboard .....	X	21 270	X	N
32200007	Other paper and paperboard products .....	X	5 846	X	N
33510000	Special dies, tools, die sets, jigs, and fixtures, except cutting tools for machine tools .....	X	400	X	N
00970099	All other materials and components, parts, containers, and supplies .....	X	122 289	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	S	15 809	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

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stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.



## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332214 KITCHEN UTENSIL, POT, AND PAN MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing metal kitchen utensils (except cutting-type), pots, and pans (except those manufactured by casting (e.g., cast iron skillets) or stamped without further fabrication).

The data published with NAICS code 332214 include the following SIC industry:

3469 Metal stampings, n.e.c. (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## **DESCRIPTION OF THE ASM ESTIMATING PROCEDURE**

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.



# Appendix E. Metropolitan Areas

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Not applicable for this report.

## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.









1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3329991	34971	34971	332999AYWV	3499500	3499500	332999GYWV pt...	3999900 pt	3999900 pt
3329991101	3497132	3497132	332999G pt	32918 pt	32918 pt	332999W pt	32910 pt	32910 pt
3329991106	3497133	3497133	332999G pt	34323 pt	34323 pt	332999W pt	34320 pt	34320 pt
3329991111	3497137	3497137	332999G pt	34945 pt	34945 pt	332999W pt	34940 pt	34940 pt
3329991YWV	3497100	3497100	332999G pt	34998 pt	34998 pt	332999W pt	34970 pt	34970 pt
3329993	34973	34973	332999G pt	34998 pt	34998 pt	332999W pt	34990 pt	34990 pt
3329993101	3497352	3497352	332999G pt	35373 pt	35373 pt	332999W pt	34990 pt	34990 pt
3329993106	3497354	3497354	332999G pt	39999 pt	39999 pt	332999W pt	35370 pt	35370 pt
3329993111	3497358	3497358	332999G101	3499811	3499811	332999W pt	35990 pt	35990 pt
3329993YWV	3497300	3497300	332999G106	3499819	3499819	332999W pt	39990 pt	39990 pt
3329994	35994 pt	35994 pt	332999G189	3494571	3494571	332999W pt	3291000 pt	3291000 pt
3329994101	3599411	3599411	332999G301	3499829	3499829	332999WYWWW pt...	3432000 pt	3432000 pt
3329994106	3599413	3599413	332999G303	3499839	3499839	332999WYWWW pt...	3494000 pt	3494000 pt
3329994111	3599415	3599415	332999G305	3537331	3537331	332999WYWWW pt...	3497000 pt	3497000 pt
3329994116	3599416	3599416	332999G306 pt	3999991 pt	3999913 pt	332999WYWWW pt...	3499000 pt	3499000 pt
3329994121	3599425	3599425	332999G306 pt	3999991 pt	3999944 pt	332999WYWWW pt...	3537000 pt	3537000 pt
3329994YWV	3599400 pt	3599400 pt	332999G306 pt	3999991 pt	3999999 pt	332999WYWWW pt...	3599000 pt	3599000 pt
3329997	34992	34992	332999G313	3291831	3291831	332999WYWWW pt...	3999000 pt	3999000 pt
3329997101	3499211	3499211	332999G316	3291835	3291890 pt	332999WYWWW pt...	3291002 pt	3291002 pt
3329997106	3499213	3499213	332999G399 pt	3432329	3432332 pt	332999WYWWW pt...	3432002 pt	3432002 pt
3329997YWV	3499200	3499200	332999G399 pt	3499898	3499899 pt	332999WYWWW pt...	3494002 pt	3494002 pt
3329999	34993	34993	332999GYWV pt...	3291800 pt	3291800 pt	332999WYWWW pt...	3497002 pt	3497002 pt
3329999100	3499300	3499300	332999GYWV pt...	3432300 pt	3432300 pt	332999WYWWW pt...	3499002 pt	3499002 pt
332999A	34995	34995	332999GYWV pt...	3494500 pt	3494500 pt	332999WYWWW pt...	3537002 pt	3537002 pt
332999A101	3499511	3499511	332999GYWV pt...	3499800 pt	3499800 pt	332999WYWWW pt...	3599002 pt	3599002 pt
332999A106	3499521	3499521	332999GYWV pt...	3537300 pt	3537300 pt	332999WYWWW pt...	3999002 pt	3999002 pt
332999A111	3499531	3499531						
332999A116	3499539	3499539						





# Prefabricated Metal Building and Component Manufacturing

## 1997

Issued August 1999

EC97M-3323A

### 1997 Economic Census

*Manufacturing*

Industry Series



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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**

Under Secretary for  
Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.



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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332311</b>	<b>Prefabricated metal building &amp; component mfg</b> .....	<b>557</b>	<b>603</b>	<b>25 967</b>	<b>775 124</b>	<b>17 782</b>	<b>35 791</b>	<b>441 647</b>	<b>1 767 827</b>	<b>2 450 281</b>	<b>4 206 293</b>	<b>57 133</b>
344800	Prefabricated metal buildings ..	N	603	25 967	775 124	17 782	35 791	441 647	1 767 827	2 450 281	4 206 293	57 133

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)	
	E <sup>1</sup>	Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)					Wages (\$1,000)
<b>332311, PREFABRICATED METAL BUILDING &amp; COMPONENT MFG</b>												
United States .....	-	<b>603</b>	<b>239</b>	<b>25 967</b>	<b>775 124</b>	<b>17 782</b>	<b>35 791</b>	<b>441 647</b>	<b>1 767 827</b>	<b>2 450 281</b>	<b>4 206 293</b>	<b>57 133</b>
Alabama .....	-	18	10	1 462	47 721	877	1 798	24 570	126 358	140 925	266 201	3 504
Arizona .....	1	11	3	508	11 262	344	539	6 427	22 337	29 069	51 542	1 163
Arkansas .....	-	11	4	473	15 372	276	556	7 809	36 361	47 299	83 318	1 383
California .....	1	52	21	1 737	50 000	1 130	2 330	26 999	117 398	135 677	254 510	4 112
Colorado .....	-	5	3	146	4 618	91	164	1 997	7 097	18 160	25 194	166
Connecticut .....	-	9	2	257	5 225	229	369	4 375	11 192	15 440	26 468	170
Florida .....	-	35	13	1 185	29 000	839	1 717	17 299	75 869	102 786	177 845	3 459
Georgia .....	-	39	20	1 326	31 446	1 023	2 129	20 813	71 300	126 329	196 250	2 548
Illinois .....	-	20	10	1 674	51 113	1 414	2 735	40 945	174 019	278 710	455 607	3 177
Indiana .....	-	11	6	634	19 944	452	919	12 198	60 947	106 372	164 701	1 813
Iowa .....	-	12	8	1 049	28 848	701	1 395	16 434	90 031	114 085	203 564	1 800
Louisiana .....	-	17	3	581	13 350	375	824	7 446	45 188	52 966	97 032	388
Michigan .....	2	16	6	298	9 525	190	402	5 271	18 827	16 391	34 884	535
Minnesota .....	1	16	3	202	6 201	149	236	3 031	13 109	16 537	29 183	552
Mississippi .....	-	14	7	959	30 025	568	1 314	13 454	80 187	104 678	185 322	2 489
Missouri .....	1	21	8	573	19 950	376	793	9 905	46 248	51 202	96 751	1 194
New Jersey .....	-	7	3	141	5 022	93	201	2 428	8 745	14 194	23 029	196
New York .....	-	14	6	724	23 653	448	1 026	12 783	41 026	35 833	76 762	915
North Carolina .....	-	20	9	1 333	45 383	892	1 787	25 529	107 440	144 644	249 759	2 711
Ohio .....	-	23	9	1 005	29 934	688	1 252	15 684	82 947	97 902	180 033	2 927
Oklahoma .....	-	13	2	326	10 724	197	429	5 607	24 431	34 326	59 079	737
Oregon .....	2	7	4	162	5 476	95	205	3 156	12 002	18 537	30 735	479
Pennsylvania .....	-	18	8	474	14 097	333	748	7 510	41 719	58 003	99 703	1 826
South Carolina .....	2	8	2	140	2 795	83	86	1 551	4 985	4 319	9 222	50
Tennessee .....	-	10	3	688	26 085	439	1 039	13 054	44 583	63 473	107 494	1 752
Texas .....	-	72	24	3 087	95 805	2 114	4 667	50 460	148 625	262 903	410 584	6 562
Virginia .....	-	7	3	379	9 599	333	685	7 799	16 695	15 317	27 877	1 595
Washington .....	-	9	4	294	9 996	172	373	5 028	19 183	20 989	40 243	725
Wisconsin .....	-	15	6	650	25 152	437	933	13 513	61 498	77 416	139 223	1 340

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332311, PREFABRICATED METAL BUILDING &amp; COMPONENT MFG</b>		<b>332311, PREFABRICATED METAL BUILDING &amp; COMPONENT MFG—Con.</b>	
Companies <sup>1</sup> .....	number.. 557	Value added .....	\$1,000.. 1 767 827
All establishments .....	number.. 603	Total inventories, beginning of year .....	\$1,000.. 348 779
Establishments with 1 to 19 employees .....	number.. 364	Finished goods inventories, beginning of year .....	\$1,000.. 86 282
Establishments with 20 to 99 employees .....	number.. 178	Work-in-process inventories, beginning of year .....	\$1,000.. 56 816
Establishments with 100 employees or more .....	number.. 61	Materials and supplies inventories, beginning of year .....	\$1,000.. 225 681
All employees .....	number.. 25 967	Total inventories, end of year .....	\$1,000.. 360 084
Total compensation <sup>2</sup> .....	\$1,000.. 929 780	Finished goods inventories, end of year .....	\$1,000.. 71 894
Annual payroll .....	\$1,000.. 775 124	Work-in-process inventories, end of year .....	\$1,000.. 63 019
Total fringe benefits .....	\$1,000.. 154 656	Materials and supplies inventories, end of year .....	\$1,000.. 225 171
Production workers, average for year .....	number.. 17 782	Gross book value of total assets at beginning of year .....	\$1,000.. 752 404
Production workers on March 12 .....	number.. 17 537	Total capital expenditures (new and used) .....	\$1,000.. 57 133
Production workers on May 12 .....	number.. 17 667	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 12 558
Production workers on August 12 .....	number.. 17 968	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 44 575
Production workers on November 12 .....	number.. 17 956	Total retirements <sup>2</sup> .....	\$1,000.. 24 292
Production-worker hours .....	1,000.. 35 791	Gross book value of total assets at end of year .....	\$1,000.. 785 245
Production-worker wages .....	\$1,000.. 441 647	Total depreciation during year <sup>2</sup> .....	\$1,000.. 53 936
Total cost of materials .....	\$1,000.. 2 450 281	Total rental payments <sup>2</sup> .....	\$1,000.. 28 415
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 2 162 708	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 12 471
Cost of resales .....	\$1,000.. 198 962	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 15 944
Cost of fuels .....	\$1,000.. 10 705	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 3 919
Cost of purchased electricity .....	\$1,000.. 17 779	Response coverage ratio <sup>4</sup> .....	percent.. 61
Cost of contract work .....	\$1,000.. 60 127	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 11 091
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 293 899	Response coverage ratio <sup>4</sup> .....	percent.. 61
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 10 429
Total value of shipments .....	\$1,000.. 4 206 293	Response coverage ratio <sup>4</sup> .....	percent.. 61
Primary products value of shipments .....	\$1,000.. 3 780 149	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 5 824
Secondary products value of shipments .....	\$1,000.. 154 116	Response coverage ratio <sup>4</sup> .....	percent.. 61
Total miscellaneous receipts .....	\$1,000.. 272 028	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 5 340
Value of resales .....	\$1,000.. 240 006	Response coverage ratio <sup>4</sup> .....	percent.. 61
Contract receipts .....	\$1,000.. 4 502	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 10 980
Other miscellaneous receipts .....	\$1,000.. 27 520	Response coverage ratio <sup>4</sup> .....	percent.. 61
Primary products specialization ratio .....	percent.. 96	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 2 213
Value of primary products shipments made in all industries .....	\$1,000.. 3 871 710	Response coverage ratio <sup>4</sup> .....	percent.. 61
Value of primary products shipments made in this industry .....	\$1,000.. 3 780 149	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 2 106
Value of primary products shipments made in other industries .....	\$1,000.. 91 561	Response coverage ratio <sup>4</sup> .....	percent.. 61
Coverage ratio .....	percent.. 97		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332311, PREFABRICATED METAL BUILDING &amp; COMPONENT MFG</b>												
<b>All establishments</b> .....	-	<b>603</b>	<b>239</b>	<b>25 967</b>	<b>775 124</b>	<b>17 782</b>	<b>35 791</b>	<b>441 647</b>	<b>1 767 827</b>	<b>2 450 281</b>	<b>4 206 293</b>	<b>57 133</b>
Establishments with 1 to 4 employees .....	8	196	-	407	9 928	304	530	5 798	21 151	30 538	51 795	1 112
Establishments with 5 to 9 employees .....	7	87	-	604	15 049	401	704	8 347	33 680	44 936	78 912	1 481
Establishments with 10 to 19 employees .....	3	81	-	1 068	26 896	696	1 256	14 712	59 596	72 164	130 893	1 825
Establishments with 20 to 49 employees .....	-	117	117	3 841	110 852	2 601	5 414	60 606	251 311	344 483	593 007	10 112
Establishments with 50 to 99 employees .....	-	61	61	4 154	122 820	2 805	5 772	63 554	294 673	438 178	729 935	11 209
Establishments with 100 to 249 employees .....	-	39	39	6 516	190 877	4 671	9 622	118 195	540 103	682 889	1 218 894	12 779
Establishments with 250 to 499 employees .....	-	18	18	5 978	194 026	4 043	8 969	106 604	424 170	521 040	945 174	9 579
Establishments with 500 to 999 employees .....	-	4	4	3 399	104 676	2 261	3 524	63 831	143 143	316 053	457 683	9 036
Establishments with 1,000 to 2,499 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	238	-	1 030	23 621	708	1 146	13 466	49 753	72 981	123 060	2 502

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332311</b>	<b>Prefabricated metal building &amp; component mfg</b> .....	<b>603</b>	<b>25 967</b>	<b>775 124</b>	<b>17 782</b>	<b>35 791</b>	<b>441 647</b>	<b>1 767 827</b>	<b>2 450 281</b>	<b>4 206 293</b>	<b>57 133</b>
3323111	Prefabricated metal building and component systems, excluding farm service buildings, residential buildings, and parts .....	146	18 009	561 532	12 298	25 196	324 315	1 237 285	1 752 218	2 974 477	38 069
3323113	Other prefabricated and portable metal buildings and parts .....	152	6 052	166 457	4 177	8 297	90 359	432 454	563 634	998 911	14 364

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332311</b>	<b>Prefabricated metal buildings and components</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>3 871 710</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>2 578 651</b>
3323111	Prefabricated metal building and component systems, excluding farm service buildings, residential buildings, and parts	N	X	X	2 598 581	N	X	X	1 674 112
33231111	Prefabricated metal building systems, excluding farm service buildings, residential buildings, and parts	N	X	X	412 719	N	X	X	N
3323111106	Institutional, medical, and religious prefabricated metal building systems, excluding farm service buildings, residential buildings, and parts	32	X	X	157 091	29	X	X	79 623
3323111111	Public and educational prefabricated metal building systems, excluding farm service buildings, residential buildings, and parts	40	X	X	255 628	39	X	X	126 546
33231112	Industrial and commercial prefabricated metal building systems, excluding farm service buildings, residential buildings, and parts	N	X	X	2 168 743	N	X	X	N
3323111201	Industrial and commercial prefabricated metal building systems, excluding farm service buildings, residential buildings, and parts	138	X	X	2 168 743	113	X	X	1 369 263
3323111Y	Prefabricated metal building and component systems, excluding farm service buildings, residential buildings, and parts, nsk	N	X	X	17 119	N	X	X	N
3323111YWV	Prefabricated metal building and component systems, excluding farm service buildings, residential buildings, and parts, nsk	N	X	X	17 119	N	X	X	98 680
3323113	Other prefabricated and portable metal buildings and parts	N	X	X	1 049 887	N	X	X	685 484
33231131	Prefabricated and portable farm services buildings, greenhouses, and grain storage buildings, steel and aluminum	N	X	X	288 783	N	X	X	N
3323113101	Prefabricated and portable greenhouses, steel and aluminum	26	X	X	120 740	25	X	X	82 631
3323113106	Prefabricated and portable grain storage buildings, including farm and commercial types, steel and aluminum	20	X	X	91 626	14	X	X	23 678
3323113111	Other prefabricated and portable farm service buildings (livestock shelters, machinery storage, etc.), steel and aluminum	29	X	X	76 417	28	X	X	49 218
33231132	Prefabricated and portable aluminum and steel buildings	N	X	X	750 214	N	X	X	N
3323113216	Prefabricated and portable small steel utility buildings, including toolsheds, cabanas, storage houses, etc.	20	X	X	143 489	16	X	X	55 186
3323113221	Other prefabricated and portable steel buildings	46	X	X	194 396	29	X	X	75 196
3323113226	Prefabricated and portable dwellings, steel and aluminum, including vacation homes and camps	7	X	X	11 566	10	X	X	29 827
3323113231	Prefabricated and portable small aluminum utility buildings, including toolsheds, cabanas, storage houses, etc.	14	X	X	95 058	23	X	X	58 728
3323113236	Other prefabricated and portable aluminum buildings	12	X	X	47 648	25	X	X	61 548
3323113241	Panels, parts, or sections for prefabricated buildings, not sold as a complete unit, steel and aluminum	75	X	X	258 057	61	X	X	207 283
3323113Y	Other prefabricated and portable metal buildings and parts, nsk	N	X	X	10 890	N	X	X	N
3323113YWV	Other prefabricated and portable metal buildings and parts, nsk	N	X	X	10 890	N	X	X	42 189
332311W	Prefabricated metal buildings and components, nsk, total	N	X	X	223 242	N	X	X	219 055
332311WY	Prefabricated metal buildings and components, nsk, total	N	X	X	223 242	N	X	X	N
332311WYWW	Prefabricated metal buildings and components, nsk, for nonadministrative-record establishments	N	X	X	106 022	N	X	X	153 527
332311WYWY	Prefabricated metal buildings and components, nsk, for administrative-record establishments	N	X	X	117 220	N	X	X	65 528

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3323111</b>	<b>PREFABRICATED METAL BUILDING AND COMPONENT SYSTEMS, EXCLUDING FARM SERVICE BUILDINGS, RESIDENTIAL BUILDINGS, AND PARTS</b>		
	United States .....	<b>2 598 581</b>	<b>1 674 112</b>
	Alabama .....	162 257	98 547
	Arizona .....	16 105	N
	Arkansas .....	76 581	N
	California .....	118 053	110 334
	Florida .....	105 990	52 404
	Georgia .....	103 866	67 982
	Illinois .....	314 069	N
	Indiana .....	138 467	N
	Iowa .....	159 682	N
	Louisiana .....	71 628	N
	Mississippi .....	157 904	70 691
	Missouri .....	60 461	N
	Nebraska .....	42 135	N
	New York .....	26 717	26 948
	North Carolina .....	185 664	122 292
	Ohio .....	86 349	55 598
	Pennsylvania .....	27 746	42 844
	South Carolina .....	2 710	N
	Texas .....	248 563	171 251
	Virginia .....	19 802	N
	Washington .....	31 226	N
<b>3323113</b>	<b>OTHER PREFABRICATED AND PORTABLE METAL BUILDINGS AND PARTS</b>		
	United States .....	<b>1 049 887</b>	<b>685 484</b>
	Alabama .....	62 592	6 320
	California .....	75 496	45 812
	Colorado .....	17 366	3 836
	Connecticut .....	5 150	N
	Florida .....	56 661	33 405
	Georgia .....	76 933	32 566
	Indiana .....	13 901	N
	Iowa .....	34 569	34 252
	Kentucky .....	11 118	12 400
	Louisiana .....	11 321	11 173
	Michigan .....	10 190	18 084
	Minnesota .....	16 319	12 741
	Mississippi .....	12 087	N
	Missouri .....	29 859	17 530
	New Jersey .....	9 788	N
	New York .....	34 256	42 401
	North Carolina .....	18 415	16 836
	North Dakota .....	13 947	N
	Ohio .....	57 454	22 160
	Oregon .....	17 461	N
	Pennsylvania .....	59 650	25 973
	South Dakota .....	8 999	N
	Texas .....	123 308	41 755

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332311</b>	<b>PREFABRICATED METAL BUILDING &amp; COMPONENT MFG</b>				
33272203	Metal bolts, nuts, screws, washers, rivets, and other screw machine products .....	X	108 916	X	42 376
33200095	Other fabricated metal products (except forgings) .....	X	129 818	X	58 236
33100035	Castings (rough and semifinished) .....	X	18 438	X	956
33210001	Forgings .....	X	D	X	D
33120007	Steel bars, bar shapes, and plates (except castings, forgings, and fabricated metal products) .....	X	216 098	X	134 941
33120009	Steel concrete reinforcing bars .....	X	7 360	X	D
33120017	Steel sheet and strip, including tin plate .....	X	659 219	X	479 105
33120069	Steel structural shapes (except castings, forgings, and fabricated metal products) .....	X	237 688	X	51 552
33120037	All other steel shapes and forms (except castings, forgings, and fabricated metal products) .....	X	293 961	X	172 898
33142111	Copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	D

See footnotes at end of table.



**Table 7. Materials Consumed by Kind: 1997 and 1992—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332311</b>	<b>PREFABRICATED METAL BUILDING &amp; COMPONENT MFG— Con.</b>				
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing .....	X	60 277	X	58 440
33131600	Aluminum and aluminum-base alloy extruded shapes, including extruded rod, bar, pipe, tube, etc. ....	X	40 565	X	20 531
33100007	All other aluminum and aluminum-base alloy shapes and forms, including refinery shapes (except castings and forgings) .....	X	25 476	X	29 779
33100083	Other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	20 901	X	2 000
00190023	Iron and steel scrap, excluding home scrap .....	X	1 182	X	D
32551003	Paints, varnishes, lacquers, stains, shellacs, japans, enamels, and allied products .....	X	49 186	X	16 988
00970099	All other materials and components, parts, containers, and supplies .....	X	129 135	X	D
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	162 364	X	D

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: <sup>p</sup> 10 to 19 percent estimated; <sup>q</sup> 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

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stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332311 PREFABRICATED METAL BUILDING AND COMPONENT MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing prefabricated metal buildings, panels and sections.

The data published with NAICS code 332311 include the following SIC industry:

3448 Prefabricated metal buildings



# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsk) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.



## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.

# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33211111	34625	34625	3321165281	3469989	3469989	3322127 pt.	37999 pt	37999 pt
3321111101	3462511	3462511	3321165291	3469997	3469997	3322127101	3423611	3423611
332111206	3462513	3462513	3321165361	3469971	3469971	3322127111	3423621	3423621
332111311	3462515	3462515	3321165YVW	3469900	3469900	3322127116	3423631	3423631
332111416	3462517	3462517	332116W	34690 pt	34690 pt	3322127121	3423641	3423641
332111416	3462500	3462500	332116WYVW	3469000 pt	3469000 pt	3322127131	3423681	3423681
3321113	34626	34626	332116WYVW	3469002 pt	3469002 pt	3322127136	3423685	3423685
3321113101	3462611	3462611	3321170 pt.	34990 pt	34990 pt	3322127141	3423698	3423698
3321113106	3462613	3462613	3321170 pt.	34996	34996	3322127146	3423698	3423698
3321113111	3462616	3462616	3321170106	3499633	3499633	3322127226	3524101	3524100 pt
3321113YVW	3462600	3462600	3321170211	3499655	3499655	3322127YVW pt.	3423600	3423600
3321115	34627	34627	3321170321	3499677	3499677	3322127YVW pt.	3524100 pt	3524100 pt
3321115101	3462712	3462712	3321170321	3499677	3499677	3322127YVW pt.	3799900 pt	3799900 pt
3321115106	3462716	3462716	3321170401	3499611	3499611	3322129 pt.	35455	35455
3321115YVW	3462700	3462700	3321170416	3499666	3499666	3322129 pt.	36992 pt	36992 pt
3321117	34628	34628	3321170426	3499688	3499688	3322129101	3545511	3545511
3321117101	3462812	3462812	3321170YVW pt.	3499000 pt	3499000 pt	3322129106	3545513	3545513
3321117106	3462816	3462816	3321170YVW pt.	3499600	3499600	3322129111	3545515	3545515
3321117YVW	3462800	3462800	3321170YVW	3499002 pt	3499002 pt	3322129116	3545517	3545517
332111W	34620	34620	3322111 pt.	34211	34211	3322129121	3545521	3545521
332111WYVW	3462000	3462000	3322111 pt.	39141 pt	39141 pt	3322129126	3545561	3545561
332111YVW	3462002	3462002	3322111 pt.	39142 pt	39142 pt	3322129131	3545565	3545565
3321121	34635	34635	3322111101	3421111	3421111	3322129146	3545577	3545577
3321121101	3463521	3463521	3322111103	3914245	3914245	3322129161	3699255	3699255
3321121206	3463523	3463523	3322111106	3914155	3914170 pt	3322129236	3545571	3545571
3321121311	3463525	3463525	332211211	3421125	3421125	3322129341	3545573	3545573
3321121316	3463529	3463529	332211222	3421130	3421130	3322129451	3545579	3545579
3321121YVW	3463500	3463500	332211326	3421153	3421153	3322129YVW pt.	3545500	3545500
3321122	34639	34639	332211331	3421155	3421155	3322129YVW pt.	3699200 pt	3699200 pt
3321122101	3463915	3463915	332211336	3421157	3421157	332212W pt.	34230	34230
3321122106	3463925	3463925	332211344	3421159	3421159	332212W pt.	35230 pt	35230 pt
3321122111	3463935	3463935	332211355	3421180	3421180	332212W pt.	35240 pt	35240 pt
3321122YVW	3463900	3463900	3322114200	3421100	3421100	332212W pt.	35450 pt	35450 pt
332112W	34630	34630	3322113	34212	34212	332212W pt.	36990 pt	36990 pt
332112WYVW	3463000	3463000	3322113101	3421205	3421205	332212W pt.	37990 pt	37990 pt
332112WYVW	3463002	3463002	3322113106	3421210	3421210	332212W pt.	39990 pt	39990 pt
3321140 pt.	34490 pt	34490 pt	3322113111	3421216	3421216	332212WYVW pt.	3423000	3423000
3321140 pt.	34498	34498	3322113YVW	3421200	3421200	332212WYVW pt.	3523000 pt	3523000 pt
3321140101	3449811	3449811	332211W pt.	34210	34210	332212WYVW pt.	3524000 pt	3524000 pt
3321140206	3449813	3449813	332211W pt.	39140 pt	39140 pt	332212WYVW pt.	3545000 pt	3545000 pt
3321140311	3449815	3449815	332211WYVW pt.	3421000	3421000	332212WYVW pt.	3699000 pt	3699000 pt
3321140416	3449817	3449817	332211WYVW pt.	3914000 pt	3914000 pt	332212WYVW pt.	3799000 pt	3799000 pt
3321140YVW pt.	3449800 pt.	3449800 pt	332211WYVW pt.	3421002	3421002	332212WYVW pt.	3999000 pt	3999000 pt
3321140YVW pt.	3449800	3449800	332211WYVW pt.	3914002 pt.	3914002 pt	332212WYVW pt.	3423002	3423002
3321140YVW	3449002 pt.	3449002 pt	3322121 pt.	34231	34231	332212WYVW pt.	3523002 pt	3523002 pt
3321150 pt.	34660	34660	3322121 pt.	39999 pt	39999 pt	332212WYVW pt.	3524002 pt	3524002 pt
3321150 pt.	34661	34661	3322121101	3423112	3423112	332212WYVW pt.	3545002 pt	3545002 pt
3321150101	3466105	3466105	3322121206	3423113	3423113	332212WYVW pt.	3699002 pt	3699002 pt
3321150103 pt.	3466200 pt.	3466200	3322121311	3423121	3423121	332212WYVW pt.	3799002 pt	3799002 pt
3321150103 pt.	3466200 pt.	3466230	3322121351	3423141	3423141	3322130	3999002 pt	3999002 pt
3321150103 pt.	3466200 pt.	3466232	3322121356	3423151	3423151	3322130101	34250	34250
3321150106 pt.	3466123 pt.	3466120	3322121361	3423155	3423155	3322130101	3425011	3425011
3321150106 pt.	3466123 pt.	3466122	3322121365	3999971	3999971	3322130111	3425013	3425013
3321150YVW pt.	3466000	3466000	3322121399	3423197	3423197	3322130111	3425016	3425016
3321150YVW pt.	3466100	3466100	3322121416	3423131	3423131	3322130116	3425018	3425018
3321150YVW	3466002	3466002	3322121421	3423133	3423133	3322130122	3425019	3425019
3321161	34692	34692	3322121426	3423136	3423136	3322130226	3425031	3425031
3321161101	3469201	3469201	3322121431	3423137	3423137	3322130231	3425035	3425035
3321161115	3469215	3469215	3322121436	3423138	3423138	3322130236	3425036	3425036
3321161205	3469205	3469205	3322121444	3423139	3423139	3322130244	3425039	3425039
3321161311	3469211	3469211	3322121YVW pt.	3423100	3423100	3322130255	3425041	3425041
3321161331	3469231	3469231	3322121YVW pt.	3999900 pt.	3999900 pt.	3322130361	3425043	3425043
3321161352	3469252	3469252	3322123 pt.	34234	34234	3322130365	3425045	3425045
3321161354	3469253	3469253	3322123 pt.	3523E pt	3523E pt	3322130377	3425049	3425049
3321161388	3469288	3469288	3322123101	3423414	3423414	3322130YVW	3425000	3425000
3321161398	3469298	3469298	3322123106	3423433	3423433	3322130YVW	3425002	3425002
3321161421	3469220	3469220	3322123111	3423444	3423444	3322141	34694	34694
3321161441	3469241	3469241	3322123121	3423498	3423498	3322141111	3469411	3469411
3321161525	3469225	3469225	3322123216	3523E80	3523E00 pt	3322141221	3469414	3469414
3321161561	3469261	3469261	3322123YVW pt.	3423400	3423400	3322141231	3469417	3469417
3321161571	3469271	3469271	3322123YVW pt.	3523E00 pt	3523E00 pt	3322141241	3469429	3469429
3321161584	3469284	3469284	3322123YVW pt.	34235	34235	3322141YVW	3469400	3469400
3321161YVW	3469200	3469200	3322125	34235	34235	3322143	34695	34695
3321163	34696	34696	3322125101	3423511	3423511	3322143101	3469507	3469507
3321163100	3469600	3469600	3322125206	3423512	3423512	3322143211	3469509	3469509
3321165	34699	34699	3322125311	3423521	3423521	3322143221	3469515	3469515
3321165101	3469941	3469941	3322125316	3423522	3423522	3322143231 pt.	3469525 pt.	3469525
3321165211	3469948	3469948	3322125322	3423522	3423522	3322143231 pt.	3469525 pt.	3469525
3321165221	3469951	3469951	3322125331	3423541	3423541	3322143241 pt.	3469599 pt.	3469599
3321165231	3469959	3469959	3322125YVW	3423500	3423500	3322143YVW	3469500	3469500
3321165241	3469961	3469961	3322127 pt.	34236	34236	332214W	34690 pt	34690 pt
3321165251	3469969	3469969	3322127 pt.	35241 pt	35241 pt	332214WYVW	3469000 pt	3469000 pt
3321165271	3469985	3469985				332214WYVW	3469002 pt	3469002 pt







1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3329991	34971	34971	332999AYWV	3499500	3499500	332999GYWV pt...	3999900 pt	3999900 pt
3329991101	3497132	3497132	332999G pt	32918 pt	32918 pt	332999W pt	32910 pt	32910 pt
3329991106	3497133	3497133	332999G pt	34323 pt	34323 pt	332999W pt	34320 pt	34320 pt
3329991111	3497137	3497137	332999G pt	34945 pt	34945 pt	332999W pt	34940 pt	34940 pt
3329991YWV	3497100	3497100	332999G pt	34998 pt	34998 pt	332999W pt	34970 pt	34970 pt
3329993	34973	34973	332999G pt	34998 pt	34998 pt	332999W pt	34990 pt	34990 pt
3329993101	3497352	3497352	332999G pt	35373 pt	35373 pt	332999W pt	34990 pt	34990 pt
3329993106	3497354	3497354	332999G pt	39999 pt	39999 pt	332999W pt	35370 pt	35370 pt
3329993111	3497358	3497358	332999G101	3499811	3499811	332999W pt	35990 pt	35990 pt
3329993YWV	3497300	3497300	332999G106	3499819	3499819	332999W pt	39990 pt	39990 pt
3329994	35994 pt	35994 pt	332999G189	3494571	3494571	332999W pt	3291000 pt	3291000 pt
3329994101	3599411	3599411	332999G301	3499829	3499829	332999WYWWW pt...	3432000 pt	3432000 pt
3329994106	3599413	3599413	332999G303	3499839	3499839	332999WYWWW pt...	3494000 pt	3494000 pt
3329994111	3599415	3599415	332999G305	3537331	3537331	332999WYWWW pt...	3497000 pt	3497000 pt
3329994116	3599416	3599416	332999G306 pt	3999991 pt	3999913 pt	332999WYWWW pt...	3499000 pt	3499000 pt
3329994121	3599425	3599425	332999G306 pt	3999991 pt	3999944 pt	332999WYWWW pt...	3537000 pt	3537000 pt
3329994YWV	3599400 pt	3599400 pt	332999G306 pt	3999991 pt	3999999 pt	332999WYWWW pt...	3599000 pt	3599000 pt
3329997	34992	34992	332999G313	3291831	3291831	332999WYWWW pt...	3999000 pt	3999000 pt
3329997101	3499211	3499211	332999G316	3291835	3291890 pt	332999WYWWW pt...	3291002 pt	3291002 pt
3329997106	3499213	3499213	332999G399 pt	3432329	3432332 pt	332999WYWWW pt...	3432002 pt	3432002 pt
3329997YWV	3499200	3499200	332999G399 pt	3499898	3499899 pt	332999WYWWW pt...	3494002 pt	3494002 pt
3329999	34993	34993	332999GYWV pt...	3291800 pt	3291800 pt	332999WYWWW pt...	3497002 pt	3497002 pt
3329999100	3499300	3499300	332999GYWV pt...	3432300 pt	3432300 pt	332999WYWWW pt...	3499002 pt	3499002 pt
332999A	34995	34995	332999GYWV pt...	3494500 pt	3494500 pt	332999WYWWW pt...	3537002 pt	3537002 pt
332999A101	3499511	3499511	332999GYWV pt...	3499800 pt	3499800 pt	332999WYWWW pt...	3599002 pt	3599002 pt
332999A106	3499521	3499521	332999GYWV pt...	3537300 pt	3537300 pt	332999WYWWW pt...	3999002 pt	3999002 pt
332999A111	3499531	3499531						
332999A116	3499539	3499539						



# Fabricated Structural Metal Manufacturing

1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



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# Fabricated Structural Metal Manufacturing

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Compan-ies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufac-ture (\$1,000)	Cost of materials (\$1,000)	Value of ship-ments (\$1,000)	Total capital ex-pen-ditures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332312</b>	<b>Fabricated structural metal mfg</b>	<b>2 867</b>	<b>3 040</b>	<b>92 512</b>	<b>2 940 742</b>	<b>66 990</b>	<b>138 124</b>	<b>1 797 771</b>	<b>7 217 379</b>	<b>8 995 169</b>	<b>16 124 652</b>	<b>294 145</b>
344100	Fabricated structural metal . . . . .	N	2 888	83 783	2 637 889	60 969	126 440	1 616 849	6 396 484	7 657 911	13 958 631	263 918
344920	Miscellaneous metal work (pt) . . . . .	N	152	8 729	302 853	6 021	11 684	180 922	820 895	1 337 258	2 166 021	30 227

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.  
<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufac-ture (\$1,000)	Cost of materials (\$1,000)	Value of ship-ments (\$1,000)	Total capital ex-pen-ditures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332312, FABRICATED STRUCTURAL METAL MFG</b>												
<b>United States . . . . .</b>	<b>1</b>	<b>3 040</b>	<b>1 176</b>	<b>92 512</b>	<b>2 940 742</b>	<b>66 990</b>	<b>138 124</b>	<b>1 797 771</b>	<b>7 217 379</b>	<b>8 995 169</b>	<b>16 124 652</b>	<b>294 145</b>
Alabama . . . . .	-	104	49	3 636	114 778	2 528	7 302	63 985	253 273	332 599	590 481	12 026
Arizona . . . . .	-	42	19	1 698	54 108	940	1 790	21 454	145 255	143 348	298 840	5 644
Arkansas . . . . .	-	33	13	1 548	46 184	1 088	1 928	23 941	125 850	154 277	284 879	3 429
California . . . . .	1	260	85	6 972	243 211	4 945	10 286	147 670	577 472	509 023	1 077 684	19 633
Colorado . . . . .	1	52	17	1 031	33 665	737	1 453	20 203	74 978	92 281	165 390	4 166
Connecticut . . . . .	1	32	6	533	20 400	384	775	12 755	48 474	43 914	93 004	1 903
Florida . . . . .	1	124	43	3 323	90 328	2 379	4 557	52 540	204 170	299 946	503 343	12 102
Georgia . . . . .	2	77	38	2 339	67 844	1 731	3 372	42 019	158 722	232 743	391 040	10 322
Idaho . . . . .	3	14	4	218	7 729	165	301	4 428	16 950	15 983	34 471	915
Illinois . . . . .	-	121	44	4 258	139 881	2 900	6 041	76 276	404 007	320 048	723 155	13 158
Indiana . . . . .	-	101	52	3 184	101 711	2 447	4 813	65 557	285 710	397 822	679 037	11 459
Iowa . . . . .	1	35	16	1 078	30 516	759	1 563	18 596	70 751	114 349	184 819	4 122
Kansas . . . . .	2	30	12	931	23 177	655	1 313	14 016	84 112	84 365	162 620	3 674
Kentucky . . . . .	2	43	19	1 072	33 803	729	1 490	20 644	68 620	90 944	160 918	3 679
Louisiana . . . . .	-	56	31	5 154	161 178	4 437	9 795	126 669	366 617	406 499	745 075	10 139
Maine . . . . .	1	19	6	459	14 112	291	621	8 148	32 147	42 070	74 092	1 313
Maryland . . . . .	1	28	12	884	26 656	658	1 086	14 855	77 720	84 663	163 112	11 088
Massachusetts . . . . .	2	47	14	799	27 894	540	1 150	16 520	66 175	59 701	125 961	2 004
Michigan . . . . .	2	117	35	2 797	93 270	1 984	4 045	57 514	223 788	226 539	454 721	9 849
Minnesota . . . . .	1	52	16	996	33 935	661	1 274	18 862	83 737	117 565	201 043	4 626
Mississippi . . . . .	1	32	14	1 090	30 456	831	1 831	19 308	95 469	119 314	212 731	2 934
Missouri . . . . .	1	63	24	2 094	68 445	1 493	2 923	37 434	165 766	219 703	385 671	6 874
Nebraska . . . . .	-	22	9	726	32 807	506	1 042	20 162	116 554	144 419	260 907	1 396
Nevada . . . . .	3	11	2	168	7 532	81	174	2 186	13 193	13 551	27 008	633
New Hampshire . . . . .	3	18	4	383	11 921	260	527	6 633	22 556	37 793	62 538	1 386
New Jersey . . . . .	-	77	14	1 216	43 612	853	1 704	25 576	102 772	156 943	260 571	2 827
New Mexico . . . . .	2	20	7	309	7 043	226	443	4 508	17 336	15 446	32 714	390
New York . . . . .	2	118	33	2 340	78 929	1 502	3 117	45 051	169 800	208 961	377 463	6 717
North Carolina . . . . .	-	91	33	2 218	74 168	1 454	3 079	39 819	189 801	320 073	508 793	8 361
North Dakota . . . . .	1	11	6	448	10 996	335	592	6 479	22 254	37 188	59 502	1 042
Ohio . . . . .	-	177	62	3 947	133 552	2 865	5 811	79 690	369 121	389 993	762 712	13 226
Oklahoma . . . . .	1	59	27	1 756	52 141	1 238	2 533	30 371	140 758	203 668	345 405	6 135
Oregon . . . . .	-	61	20	1 552	59 338	1 074	2 281	35 069	123 271	149 036	264 578	5 281
Pennsylvania . . . . .	-	150	68	5 486	177 237	4 166	7 498	109 417	464 133	535 120	987 563	15 664
South Carolina . . . . .	-	46	20	2 655	84 075	1 849	3 981	49 701	197 235	408 502	603 090	12 065
South Dakota . . . . .	-	5	3	227	7 434	153	333	4 169	14 406	24 030	39 595	499
Tennessee . . . . .	1	102	36	2 545	73 463	1 926	3 983	47 250	187 739	216 481	402 582	5 492
Texas . . . . .	1	237	110	9 194	262 676	7 034	14 915	174 665	620 213	941 492	1 553 469	27 339
Utah . . . . .	-	54	27	1 984	65 960	1 536	3 035	46 535	225 345	261 669	460 600	6 006
Virginia . . . . .	1	70	35	2 414	74 283	1 691	3 317	45 556	166 391	266 099	433 913	6 380
Washington . . . . .	1	87	24	1 513	48 158	1 117	2 071	30 686	101 896	103 120	205 287	3 966
West Virginia . . . . .	1	23	13	735	20 135	497	1 043	13 018	38 476	49 905	88 690	1 720
Wisconsin . . . . .	-	70	32	2 379	78 020	1 693	3 508	47 965	189 669	214 437	395 203	5 996

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332312, FABRICATED STRUCTURAL METAL MFG</b>		<b>332312, FABRICATED STRUCTURAL METAL MFG</b>	
Companies <sup>1</sup> .....	number.. 2 867	— Con.	
All establishments .....	number.. 3 040	Value added .....	\$1,000.. 7 217 379
Establishments with 1 to 19 employees .....	number.. 1 864	Total inventories, beginning of year .....	\$1,000.. 1 667 384
Establishments with 20 to 99 employees .....	number.. 1 012	Finished goods inventories, beginning of year .....	\$1,000.. 378 028
Establishments with 100 employees or more .....	number.. 164	Work-in-process inventories, beginning of year .....	\$1,000.. 624 873
All employees .....	number.. 92 512	Materials and supplies inventories, beginning of year .....	\$1,000.. 664 483
Total compensation <sup>2</sup> .....	\$1,000.. 3 638 849	Total inventories, end of year .....	\$1,000.. 1 797 139
Annual payroll .....	\$1,000.. 2 940 742	Finished goods inventories, end of year .....	\$1,000.. 386 576
Total fringe benefits .....	\$1,000.. 698 107	Work-in-process inventories, end of year .....	\$1,000.. 704 221
Production workers, average for year .....	number.. 66 990	Materials and supplies inventories, end of year .....	\$1,000.. 706 342
Production workers on March 15 .....	number.. 65 995	Gross book value of total assets at beginning of year .....	\$1,000.. 3 183 077
Production workers on May 15 .....	number.. 66 409	Total capital expenditures (new and used) .....	\$1,000.. 294 145
Production workers on August 15 .....	number.. 67 504	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 71 481
Production workers on November 15 .....	number.. 68 052	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 222 664
Production-worker hours .....	\$1,000.. 138 124	Total retirements <sup>2</sup> .....	\$1,000.. 73 527
Production-worker wages .....	\$1,000.. 1 797 771	Gross book value of total assets at end of year .....	\$1,000.. 3 403 695
Total cost of materials .....	\$1,000.. 8 995 169	Total depreciation during year <sup>2</sup> .....	\$1,000.. 192 311
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 6 647 342	Total rental payments <sup>2</sup> .....	\$1,000.. 190 977
Cost of resales .....	\$1,000.. 1 069 571	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 114 893
Cost of fuels .....	\$1,000.. 42 117	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 76 084
Cost of purchased electricity .....	\$1,000.. 93 844	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 23 793
Cost of contract work .....	\$1,000.. 1 142 295	Response coverage ratio <sup>4</sup> .....	percent.. 72
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 1 499 546	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 72 919
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Response coverage ratio <sup>4</sup> .....	percent.. 72
Total value of shipments .....	\$1,000.. 16 124 652	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 21 045
Primary products value of shipments .....	\$1,000.. 13 445 480	Response coverage ratio <sup>4</sup> .....	percent.. 72
Secondary products value of shipments .....	\$1,000.. 1 108 714	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 19 861
Total miscellaneous receipts .....	\$1,000.. 1 570 458	Response coverage ratio <sup>4</sup> .....	percent.. 72
Value of resales .....	\$1,000.. 1 186 474	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 13 796
Contract receipts .....	\$1,000.. 51 585	Response coverage ratio <sup>4</sup> .....	percent.. 72
Other miscellaneous receipts .....	\$1,000.. 332 399	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 14 750
Primary products specialization ratio .....	percent.. 92	Response coverage ratio <sup>4</sup> .....	percent.. 72
Value of primary products shipments made in all industries .....	\$1,000.. 13 997 386	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 17 070
Value of primary products shipments made in this industry .....	\$1,000.. 13 445 480	Response coverage ratio <sup>4</sup> .....	percent.. 72
Value of primary products shipments made in other industries .....	\$1,000.. 551 906	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 6 380
Coverage ratio .....	percent.. 96	Response coverage ratio <sup>4</sup> .....	percent.. 72

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332312, FABRICATED STRUCTURAL METAL MFG</b>												
<b>All establishments .....</b>	<b>1</b>	<b>3 040</b>	<b>1 176</b>	<b>92 512</b>	<b>2 940 742</b>	<b>66 990</b>	<b>138 124</b>	<b>1 797 771</b>	<b>7 217 379</b>	<b>8 995 169</b>	<b>16 124 652</b>	<b>294 145</b>
Establishments with 1 to 4 employees .....	8	778	—	1 669	43 818	1 236	4 330	27 560	103 082	132 770	236 049	5 263
Establishments with 5 to 9 employees .....	6	510	—	3 469	95 811	2 565	4 370	60 043	218 283	244 914	463 819	8 823
Establishments with 10 to 19 employees .....	2	576	—	8 166	250 012	5 856	11 195	147 535	596 275	663 863	1 262 518	22 458
Establishments with 20 to 49 employees .....	1	708	708	22 212	719 066	15 686	31 881	413 027	1 759 795	2 179 078	3 931 467	72 309
Establishments with 50 to 99 employees .....	1	304	304	20 864	666 434	15 288	32 362	412 896	1 505 558	1 850 307	3 340 309	64 549
Establishments with 100 to 249 employees .....	—	129	129	19 925	626 422	14 483	29 359	388 765	1 620 433	2 041 757	3 615 896	72 188
Establishments with 250 to 499 employees .....	—	27	27	8 854	306 513	6 317	13 636	197 660	871 585	1 284 666	2 157 350	34 372
Establishments with 500 to 999 employees .....	—	5	5	3 263	103 752	2 249	4 142	55 948	229 570	275 934	505 743	7 522
Establishments with 1,000 to 2,499 employees .....	—	3	3	4 090	128 914	3 310	6 849	94 337	312 798	321 880	611 501	6 661
Establishments with 2,500 employees or more .....	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records <sup>2</sup> .....	9	1 015	—	4 239	98 274	3 145	4 790	61 685	212 695	287 349	500 797	10 613

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332312</b>	<b>Fabricated structural metal mfg .....</b>	<b>3 040</b>	<b>92 512</b>	<b>2 940 742</b>	<b>66 990</b>	<b>138 124</b>	<b>1 797 771</b>	<b>7 217 379</b>	<b>8 995 169</b>	<b>16 124 652</b>	<b>294 145</b>
3323121	Fabricated structural metal bar joist and concrete reinforcing bars .....	1 213	54 595	1 797 613	38 106	80 426	1 041 508	4 590 723	6 105 352	10 651 707	167 639
3323123	Fabricated structural metal for bridges .....	59	3 270	107 640	2 568	5 514	72 748	273 108	255 305	528 604	11 832
3323125	Other fabricated structural metal .....	389	22 625	706 257	17 421	36 016	475 120	1 609 208	1 746 746	3 312 718	81 323

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332312</b>	<b>Fabricated structural metal .....</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>13 997 386</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3323121	Fabricated structural metal bar joist and concrete reinforcing bars .....	N	X	X	8 812 319	N	X	X	N
33231211	Fabricated structural iron and steel for industrial buildings, including metal bar joists, short span (open web) .....	N	X	X	3 102 387	N	X	X	N
3323121101	Fabricated structural iron and steel for industrial buildings, metal bar joists, short span (open web) .....	816	X	X	3 102 387	N	X	X	N
33231212	Fabricated structural iron and steel for commercial, residential, institutional, and public buildings .....	N	X	X	5 585 872	N	X	X	N
3323121206	Fabricated structural iron and steel for commercial buildings, including metal bar joists, long span .....	795	X	X	3 650 230	N	X	X	N
3323121211	Fabricated structural iron and steel for residential buildings, including metal concrete reinforcing bars .....	209	X	X	948 594	N	X	X	N
3323121216	Fabricated structural iron and steel for institutional, medical, and religious buildings .....	274	X	X	329 006	240	X	X	293 486
3323121221	Fabricated structural iron and steel for public and educational buildings .....	319	X	X	499 771	258	X	X	339 666
3323121226	Fabricated structural iron and steel for public utilities .....	98	X	X	87 089	73	X	X	83 131
3323121231	Fabricated structural aluminum for buildings (all types) .....	30	X	X	71 182	19	X	X	48 312
3323121Y	Fabricated structural metal bar joists and concrete reinforcing bars, nsk .....	N	X	X	124 060	N	X	X	N
3323121YVW	Fabricated structural metal bar joists and concrete reinforcing bars, nsk .....	N	X	X	124 060	N	X	X	N
3323123	Fabricated structural metal for bridges .....	N	X	X	548 455	N	X	X	512 226
33231231	Fabricated structural metal for bridges .....	N	X	X	548 455	N	X	X	N
3323123100	Fabricated structural metal for bridges .....	77	X	X	548 455	99	X	X	512 226
3323125	Other fabricated structural metal .....	N	X	X	3 151 733	N	X	X	2 027 655
33231251	Other fabricated structural iron and steel, metal and aluminum .....	N	X	X	2 785 589	N	X	X	N
3323125106	Fabricated structural iron and steel for transmission towers, substations, radio antenna towers, and supporting structures .....	66	X	X	424 837	51	X	X	221 276
3323125111	Fabricated structural iron and steel for offshore oil and gas platforms .....	35	X	X	626 639	15	X	X	295 937
3323125116	Fabricated structural iron and steel for tunneling and subway work .....	13	X	X	31 537	7	X	X	32 695
3323125121	Fabricated structural iron and steel for aerospace and defense .....	42	X	X	168 660	53	X	X	170 879
3323125126	Other fabricated structural iron and steel .....	384	X	X	1 372 367	273	X	X	560 851
3323125131	Fabricated structural aluminum for ships, boats, barges, transmission towers, and other structures .....	31	X	X	92 769	28	X	X	52 239
3323125136	Fabricated structural metal other than iron, steel, or aluminum .....	29	X	X	68 780	16	X	X	12 354
33231252	Fabricated structural iron and steel for ships, boats, and barges .....	N	X	X	305 601	N	X	X	N
3323125201	Fabricated structural iron and steel for ships, boats, and barges .....	39	X	X	305 601	45	X	X	534 795
3323125Y	Other fabricated structural metal, nsk .....	N	X	X	60 543	N	X	X	N
3323125YVW	Other fabricated structural metal, nsk .....	N	X	X	60 543	N	X	X	146 629
332312W	Fabricated structural metal, nsk, total .....	N	X	X	1 484 879	N	X	X	N
332312WY	Fabricated structural metal, nsk, total .....	N	X	X	1 484 879	N	X	X	N
332312WYWW	Fabricated structural metal, nsk, for nonadministrative-records establishments .....	N	X	X	1 028 813	N	X	X	N
332312WYWY	Fabricated structural metal, nsk, for administrative-records establishment .....	N	X	X	456 066	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for this item in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3323121</b>	<b>FABRICATED STRUCTURAL METAL BAR JOIST AND CONCRETE REINFORCING BARS</b>		
	<b>United States</b> .....	<b>8 812 319</b>	<b>N</b>
	Alabama .....	362 859	N
	Alaska .....	2 134	N
	Arizona .....	244 443	N
	Arkansas .....	189 758	N
	California .....	611 910	N
	Colorado .....	109 425	N
	Connecticut .....	44 350	N
	Delaware .....	40 300	N
	Florida .....	307 915	N
	Georgia .....	187 936	N
	Idaho .....	15 778	N
	Illinois .....	474 853	N
	Indiana .....	355 783	N
	Iowa .....	105 621	N
	Kansas .....	61 862	N
	Kentucky .....	57 480	N
	Louisiana .....	72 716	N
	Maine .....	31 887	N
	Maryland .....	107 807	N
	Massachusetts .....	76 333	N
	Michigan .....	320 411	N
	Minnesota .....	139 663	N
	Mississippi .....	151 023	N
	Missouri .....	235 563	N
	Nebraska .....	106 600	N
	New Hampshire .....	41 222	N
	New Jersey .....	204 787	N
	New Mexico .....	18 604	N
	New York .....	205 391	N
	North Carolina .....	248 273	N
	Ohio .....	352 627	N
	Oklahoma .....	169 779	N
	Oregon .....	113 877	N
	Pennsylvania .....	594 329	N
	Rhode Island .....	9 405	N
	South Carolina .....	412 028	N
	South Dakota .....	25 564	N
	Tennessee .....	277 511	N
	Texas .....	812 631	N
	Utah .....	235 901	N
	Virginia .....	261 404	N
	Washington .....	120 668	N
	West Virginia .....	31 081	N
	Wisconsin .....	166 365	N
	Wyoming .....	8 953	N
<b>3323123</b>	<b>FABRICATED STRUCTURAL METAL FOR BRIDGES</b>		
	<b>United States</b> .....	<b>548 455</b>	<b>512 226</b>
	Alabama .....	31 550	N
	Georgia .....	8 434	N
	Illinois .....	14 466	N
	Indiana .....	19 398	N
	Massachusetts .....	13 716	N
	Nebraska .....	7 348	N
	Ohio .....	25 517	24 716
	Pennsylvania .....	47 666	N
	Tennessee .....	10 276	N
	Virginia .....	29 348	31 992
	Washington .....	2 536	N
<b>3323125</b>	<b>OTHER FABRICATED STRUCTURAL METAL</b>		
	<b>United States</b> .....	<b>3 151 733</b>	<b>2 027 655</b>
	Alabama .....	55 615	31 202
	Arizona .....	10 378	6 728
	Arkansas .....	7 119	4 037
	California .....	256 094	135 329
	Colorado .....	12 551	3 427
	Florida .....	70 263	18 151
	Georgia .....	84 378	21 503
	Idaho .....	6 544	N
	Illinois .....	129 968	69 792
	Indiana .....	86 034	43 811
	Iowa .....	30 682	26 271
	Kentucky .....	64 674	19 810
	Louisiana .....	538 520	322 896
	Maine .....	24 729	N
	Maryland .....	5 553	N
	Massachusetts .....	10 071	33 048
	Michigan .....	67 353	22 338
	Minnesota .....	9 239	16 470
	Mississippi .....	27 922	58 768
	Missouri .....	34 387	30 338
	Montana .....	4 019	N
	Nebraska .....	17 258	9 336
	New Jersey .....	16 898	14 981
	New Mexico .....	4 956	2 025
	New York .....	72 727	28 845

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3323125</b>	<b>OTHER FABRICATED STRUCTURAL METAL—Con.</b>		
	North Carolina .....	69 765	N
	Ohio .....	223 499	80 774
	Oklahoma .....	81 339	48 870
	Oregon .....	57 715	39 986
	Pennsylvania.....	194 703	71 773
	South Carolina .....	23 191	50 057
	Tennessee.....	41 156	33 288
	Texas .....	456 919	132 092
	Utah .....	19 131	38 760
	Virginia .....	10 165	11 620
	Washington .....	34 660	19 693
	West Virginia.....	7 653	N
	Wisconsin .....	87 645	24 199

# Additional information is available for this item; see Appendix F.

@ Additional data are available for this item in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332312</b>	<b>FABRICATED STRUCTURAL METAL MFG</b>				
33290005	Fabricated metal pipe (except castings and forgings) .....	X	112 343	X	N
33291905	Fabricated metal valves and pipe fittings .....	X	26 057	X	N
332000A3	Fabricated metal parts specially designed for steel power boilers, n.e.c. (except castings and forgings) .....	X	D	X	N
33200039	All other fabricated metal products (except castings and forgings) .....	X	666 626	X	N
33151001	Iron and steel castings (rough and semifinished) .....	X	67 152	X	N
33152005	Aluminum and aluminum-base alloy castings (rough and semifinished) .....	X	8 181	X	N
33152003	Other nonferrous castings (rough and semifinished) .....	X	D	X	N
33210001	Forgings .....	X	5 968	X	N
33120057	Steel bars and bar shapes (except concrete reinforcing bars, castings, forgings, and fabricated metal products) .....	X	299 728	X	N
33120009	Steel concrete reinforcing bars .....	X	441 146	X	N
33120017	Steel sheet and strip, including tin plate .....	X	607 768	X	N
33120079	Steel plate .....	X	488 041	X	N
33120041	Wide flange steel structural beams .....	X	761 267	X	N
33120047	All other steel structural shapes (except sheet piling, castings, forgings, and fabricated steel products) .....	X	667 403	X	N
33120039	All other steel shapes and forms (including sheet piling, excluding castings, forgings, and fabricated metal products) .....	X	297 675	X	N
33140003	Nonferrous refinery shapes (except castings, forgings, and fabricated metal products) .....	X	1 189	X	N
33142135	Copper and copper-base alloy pipe and tube (except castings, forgings, and fabricated metal products) .....	X	16 386	X	N
33142141	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	7 364	X	N
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing .....	X	71 389	X	N
33100055	All other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	16 487	X	N
33100067	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	38 275	X	N
32551003	Paints, varnishes, lacquers, stains, shellacs, japans, enamels, and allied products .....	X	160 742	X	N
33399203	Welding electrodes .....	X	66 467	X	N
00970099	All other materials and components, parts, containers, and supplies .....	X	739 465	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	1 067 030	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.



# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332312 FABRICATED STRUCTURAL METAL MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in fabricating structural metal products, such as concrete reinforcing bars and fabricated bar joists.

The data published with NAICS code 332312 include the following SIC industries:

3441 Fabricated structural metal  
3449 Miscellaneous metal work (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.



In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.



# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3321111	34625	34625	3321165281	3469989	3469989	3322127 pt	37999 pt	37999 pt
332111101	3462511	3462511	3321165291	3469997	3469997	3322127101	3423611	3423611
332111206	3462513	3462513	3321165361	3469971	3469971	3322127111	3423621	3423621
332111311	3462515	3462515	3321165YVW	3469900	3469900	3322127116	3423631	3423631
332111416	3462517	3462517	3321166W	34690 pt	34690 pt	3322127121	3423641	3423641
332111YVW	3462500	3462500	3321166WYVW	3469000 pt	3469000 pt	3322127131	3423681	3423681
3321113	34626	34626	3321166YVW	3469002 pt	3469002 pt	3322127136	3423685	3423685
3321113101	3462611	3462611	3321170 pt	34990 pt	34990 pt	3322127141	3799906	3799923 pt
3321113106	3462613	3462613	3321170 pt	34990 pt	34990 pt	3322127199	3423698	3423698
3321113111	3462616	3462616	3321170 pt	34996	34996	3322127226	3524101	3524100 pt
3321113YVW	3462600	3462600	3321170106	3499633	3499633	3322127YVW pt	3423600	3423600
3321115	34627	34627	3321170211	3499655	3499655	3322127YVW pt	3524100 pt	3524100 pt
3321115101	3462712	3462712	3321170321	3499677	3499677	3322127YVW	3799900 pt	3799900 pt
3321115106	3462716	3462716	3321170321	3499677	3499677	3322129 pt	35455	35455
3321115YVW	3462700	3462700	3321170401	3499611	3499611	3322129 pt	36992 pt	36992 pt
3321117	34628	34628	3321170416	3499666	3499666	3322129 pt	3545511	3545511
3321117101	3462812	3462812	3321170426	3499688	3499688	3322129101	3545513	3545513
3321117106	3462816	3462816	3321170YVW pt	3499000 pt	3499000 pt	3322129106	3545513	3545513
3321117YVW	3462800	3462800	3321170YVW pt	3499600	3499600	3322129111	3545515	3545515
3321117YVW	3462800	3462800	3321170YVW	3499002 pt	3499002 pt	3322129116	3545517	3545517
332111W	34620	34620	3322111 pt	39421	39421	3322129121	3545521	3545521
332111WYVW	3462000	3462000	3322111 pt	39141 pt	39141 pt	3322129126	3545561	3545561
332111YVW	3462002	3462002	3322111 pt	39142 pt	39142 pt	3322129131	3545565	3545565
3321121	34635	34635	332211101	3421111	3421111	3322129146	3545577	3545577
3321121101	3463521	3463521	3322111103	3914245	3914270 pt	3322129161	3699255	3699200 pt
3321121206	3463523	3463523	3322111106	3914155	3914170 pt	3322129236	3545571	3545571
3321121311	3463525	3463525	3322111211	3421125	3421125	3322129341	3545573	3545573
3321121316	3463529	3463529	3322111222	3421130	3421130	3322129451	3545579	3545579
3321121YVW	3463500	3463500	3322111326	3421153	3421153	3322129YVW pt	3545500	3545500
3321122	34639	34639	3322111331	3421155	3421155	3322129YVW pt	3699200 pt	3699200 pt
3321122101	3463915	3463915	3322111336	3421157	3421157	332212W pt	34230	34230
3321122106	3463925	3463925	3322111344	3421159	3421159	332212W pt	35230 pt	35230 pt
3321122111	3463935	3463935	3322111455	3421180	3421180	332212W pt	35240 pt	35240 pt
3321122YVW	3463900	3463900	3322111YVW pt	3421100	3421100	332212W pt	35450 pt	35450 pt
332112W	34630	34630	3322111YVW pt	3914200 pt	3914200 pt	332212W pt	36990 pt	36990 pt
332112WYVW	3463000	3463000	3322113	34212	34212	332212W pt	37990 pt	37990 pt
332112WYVW	3463002	3463002	3322113101	3421205	3421205	332212W pt	39990 pt	39990 pt
3321140 pt	34490 pt	34490 pt	3322113106	3421210	3421210	332212WYVW pt	3423000	3423000
3321140 pt	34498	34498	3322113111	3421216	3421216	332212WYVW pt	3523000 pt	3523000 pt
3321140101	3449811	3449811	3322113YVW	3421200	3421200	332212WYVW pt	3524000 pt	3524000 pt
3321140206	3449813	3449813	332211W pt	34210	34210	332212WYVW pt	3545000 pt	3545000 pt
3321140311	3449815	3449815	332211W pt	39140 pt	39140 pt	332212WYVW pt	3699000 pt	3699000 pt
3321140416	3449817	3449817	332211W pt	3421000	3421000	332212WYVW pt	3799000 pt	3799000 pt
3321140YVW pt	3449000 pt	3449000 pt	332211YVW pt	3914000 pt	3914000 pt	332212WYVW pt	3999000 pt	3999000 pt
3321140YVW pt	3449800	3449800	332211YVW pt	3421002	3421002	332212WYVW pt	3423002	3423002
3321140YVW	3449002 pt	3449002 pt	332211YVW pt	3914002 pt	3914002 pt	332212WYVW pt	3523002 pt	3523002 pt
3321150 pt	34660	34660	3322121 pt	34231	34231	332212WYVW pt	3524002 pt	3524002 pt
3321150 pt	34661	34661	3322121 pt	39999 pt	39999 pt	332212WYVW pt	3545002 pt	3545002 pt
3321150 pt	34662	34662	3322121 pt	3423112	3423112	332212WYVW pt	3699002 pt	3699002 pt
3321150101	3466105	3466105	3322121101	3423112	3423112	332212WYVW pt	3799002 pt	3799002 pt
3321150103 pt	3466200 pt	3466200	3322121206	3423113	3423113	332212WYVW pt	3999002 pt	3999002 pt
3321150103 pt	3466200 pt	3466230	3322121311	3423121	3423121	3322130	34250	34250
3321150103 pt	3466200 pt	3466230	3322121351	3423141	3423141	3322130101	3425011	3425011
3321150106 pt	3466123 pt	3466120	3322121356	3423151	3423151	3322130106	3425013	3425013
3321150106 pt	3466123 pt	3466122	3322121361	3423155	3423155	3322130111	3425016	3425016
3321150YVW pt	3466100	3466000	3322121365	3999971	3999999 pt	3322130116	3425018	3425018
3321150YVW pt	3466100	3466100	3322121399	3423197	3423197	3322130122	3425019	3425019
3321150YVW	3466002	3466002	3322121416	3423131	3423131	3322130126	3425031	3425031
3321161	34692	34692	3322121421	3423133	3423133	3322130231	3425035	3425035
3321161101	3469201	3469201	3322121426	3423136	3423136	3322130236	3425036	3425036
3321161115	3469215	3469215	3322121431	3423137	3423137	3322130244	3425039	3425039
3321161205	3469205	3469205	3322121436	3423138	3423138	3322130255	3425041	3425041
3321161311	3469211	3469211	3322121444	3423139	3423139	3322130361	3425043	3425043
3321161331	3469231	3469231	3322121YVW pt	3423100	3423100	3322130365	3425045	3425045
3321161352	3469252	3469252	3322121YVW pt	3999900 pt	3999900 pt	3322130377	3425049	3425049
3321161354	3469253	3469253	3322123 pt	34234	34234	3322130YVW	3425000	3425000
3321161388	3469288	3469288	3322123 pt	3523E pt	3523E pt	3322130YVW	3425002	3425002
3321161398	3469298	3469298	3322123101	3423414	3423414	3322141	34694	34694
3321161421	3469220	3469220	3322123106	3423433	3423433	3322141111	3469411	3469411
3321161441	3469241	3469241	3322123111	3423444	3423444	3322141221	3469414	3469414
3321161525	3469225	3469225	3322123121	3423498	3423498	3322141231	3469417	3469417
3321161561	3469261	3469261	3322123216	3523E80	3523E00 pt	3322141241	3469429	3469429
3321161571	3469271	3469271	3322123YVW pt	3423400	3423400	3322141YVW	3469400	3469400
3321161584	3469284	3469284	3322123YVW pt	3523E00 pt	3523E00 pt	3322143	34695	34695
3321161YVW	3469200	3469200	3322125	34235	34235	3322143101	3469507	3469507
3321163	34696	34696	3322125101	3423511	3423511	3322143211	3469509	3469509
3321163100	3469600	3469600	3322125206	3423512	3423512	3322143221	3469515	3469515
3321165	34699	34699	3322125311	3423521	3423521	3322143231 pt	3469525 pt	3469525
3321165101	3469941	3469941	3322125316	3423522	3423522	3322143231 pt	3469525 pt	3469525
3321165211	3469948	3469948	3322125322	3423531	3423531	3322143241 pt	3469599 pt	3469599
3321165221	3469951	3469951	3322125333	3423541	3423541	3322143YVW	3469500	3469500
3321165231	3469959	3469959	3322125YVW	3423500	3423500	3322144	34695	34695
3321165241	3469961	3469961	3322127 pt	34236	34236	3322143101	3469507	3469507
3321165251	3469969	3469969	3322127 pt	35241 pt	35241 pt	3322143211	3469509	3469509
3321165271	3469985	3469985	3322127 pt	35241 pt	35241 pt	3322143221	3469515	3469515
3321165271	3469985	3469985	3322127 pt	35241 pt	35241 pt	3322143231 pt	3469525 pt	3469525
3321165271	3469985	3469985	3322127 pt	35241 pt	35241 pt	3322143241 pt	3469599 pt	3469599
3321165271	3469985	3469985	3322127 pt	35241 pt	35241 pt	3322143241 pt	3469599 pt	3469599
3321165271	3469985	3469985	3322127 pt	35241 pt	35241 pt	3322143YVW	3469500	3469500
3321165271	3469985	3469985	3322127 pt	35241 pt	35241 pt	3322144	34695	34695
3321165271	3469985	3469985	3322127 pt	35241 pt	35241 pt	3322144YVW	3469000 pt	3469000 pt
3321165271	3469985	3469985	3322127 pt	35241 pt	35241 pt	3322144YVW	3469002 pt	3469002 pt

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3323111	34481	34481	3323213251	3442298	3442298	3323233YVW pt	3446200	3446200
332311106	3448117	3448117	3323213306	3442221	3442221	3323233YVW pt	3449600	3449600
3323111111	3448118	3448118	3323213YVW	3442200	3442200	3323235	34463	34463
332311201	3448115	3448115	3323215 pt	24991 pt	24991 pt	3323235101	3446310	3446310
332311YVW	3448100	3448100	3323215 pt	34423	34423	3323235106	3446312	3446312
3323113	34482	34482	3323215 pt	34497	34497	3323235211	3446320	3446320
3323113101	3448211	3448211	332321501 pt	3442321	3442321	3323235216	3446322	3446322
3323113106	3448214	3448214	332321501 pt	3449773	3449773	3323235YVW	3446300	3446300
3323113111	3448215	3448215	332321506 pt	2499141	2499141	3323237	34464	34464
3323113216	3448216	3448216	332321506 pt	3442325	3442325	3323237101	3446410	3446410
3323113221	3448217	3448217	332321506 pt	3449775	3449775	3323237106	3446413	3446413
3323113226	3448218	3448218	3323215111 pt	3442351	3442351	3323237111	3446416	3446416
3323113231	3448226	3448226	3323215111 pt	3449779	3449779	3323237116	3446418	3446418
3323113236	3448227	3448227	3323215YVW pt	2499100 pt	2499100 pt	3323237YVW	3446400	3446400
3323113241	3448254	3448254	3323215YVW pt	3442300	3442300	3323239 pt	34465	34465
3323113YVW	3448200	3448200	3323215YVW pt	3449700	3449700	3323239 pt	3523E pt	3523E pt
3323114	34480	34480	3323217	34424	34424	3323239106	3446512	3446512
3323114YVW	3448000	3448000	3323217101	3442411	3442411	3323239111	3446530	3446530
3323114YVW	3448002	3448002	3323217106	3442412	3442412	3323239201	3446510	3446510
3323121 pt	34411	34411	3323217111	3442413	3442413	3323239311	3523E84	3523E00 pt
3323121 pt	34494	34494	3323217YVW	3442400	3442400	3323239YVW pt	3446500	3446500
3323121101 pt	3441141	3441141	3323219	34425	34425	3323239YVW pt	3523E00 pt	3523E00 pt
3323121101 pt	3449443	3449443	3323219101	3442511	3442511	332323W pt	34460	34460
3323121206 pt	3441142	3441142	3323219106	3442512	3442512	332323W pt	34490 pt	34490 pt
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3323121211 pt	3449452	3449452	332321W pt	24990 pt	24990 pt	332323WYVW pt	3446000	3446000
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3323121226	3441147	3441147	332321W pt	34420	34420	332323WYVW pt	3523000 pt	3523000 pt
3323121231	3441171	3441171	332321YVW pt	34490 pt	34490 pt	332323WYVW pt	3446002	3446002
3323121YVW pt	3441100	3441100	332321YVW pt	2499000 pt	2499000 pt	332323WYVW pt	3449002 pt	3449002 pt
3323121YVW pt	3449400	3449400	332321YVW pt	3442000	3442000	332323YVW pt	3523002 pt	3523002 pt
3323123	34412	34412	332321YVW pt	3449000 pt	3449000 pt	3324101	34431	34431
3323123100	3441200	3441200	332321YVW pt	2499002 pt	2499002 pt	3324101101	3443113	3443113
3323125	34413	34413	332321YVW pt	3442002	3442002	3324101206	3443118	3443118
3323125106	3441320	3441320	332321YVW pt	3449002 pt	3449002 pt	3324101311	3443155	3443155
3323125111	3441323	3441323	3323221	34441	34441	3324101YVW	3443100	3443100
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3323125121	3441329	3441329	3323221106	3444123	3444123	3324105101	3443308	3443308
3323125126	3441359	3441359	3323221211	3444127	3444127	3324105106 pt	3443331 pt	3443331 pt
3323125131	3441384	3441384	3323221216	3444129	3444129	3324105106 pt	3443331 pt	3443331 pt
3323125136	3441398	3441398	3323221YVW	3444100	3444100	3324105111 pt	3443332 pt	3443332 pt
3323125201	3441316	3441316	3323223	34442	34442	3324105111 pt	3443332 pt	3443332 pt
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3323130 pt	34430 pt	34430 pt	3323227211	3444423	3444423	3324105161 pt	3443343 pt	3443343 pt
3323130 pt	34432 pt	34432 pt	3323227216	3444429	3444429	3324105161 pt	3443343 pt	3443343 pt
3323130111	3443244	3443244	3323227221	3444431	3444431	3324105171 pt	3443345 pt	3443345 pt
3323130116	3443246	3443246	3323227YVW	3444400	3444400	3324105171 pt	3443345 pt	3443345 pt
3323130121	3443248	3443248	3323229	34445	34445	3324105181	3443348	3443348
3323130226	3443252	3443252	3323229106	3444516	3444516	3324105186	3443351	3443351
3323130231	3443254	3443254	3323229111	3444517	3444517	3324105291	3443352	3443352
3323130236	3443256	3443256	3323229116	3444518	3444518	3324105YVW	3443300	3443300
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3323211207	3442109	3442109	332322CYVW	3444800	3444800	332420A100	3443600	3443600
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3323211225	3442123	3442123	332322E101	3444931	3444931	332420C101	3443712	3443712
3323211328	3442124	3442124	332322E106	3444941	3444941	332420C106	3443715	3443715
3323211331	3442125	3442125	332322E211	3444953	3444953	332420C111	3443717	3443717
3323211334	3442126	3442126	332322E321	3444955	3444955	332420C116	3443719	3443719
3323211440	3442128	3442128	332322E326	3444962	3444962	332420C121	3443748	3443748
3323211443	3442130	3442130	332322E331	3444965	3444965	332420C126	3443750	3443750
3323211446	3442131	3442131	332322E336	3444998	3444998	332420CYVW	3443700	3443700
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3323211552	3442134	3442134	332322W	34440 pt	34440 pt	332420E101	3443803	3443803
3323211555	3442136	3442136	332322WYVW	3444000 pt	3444000 pt	332420E106	3443805	3443805
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3323211664	3442143	3442143	3323231	34461	34461	332420E216	3443813	3443813
3323211667	3442144	3442144	3323231106	3446112	3446112	332420E221	3443820	3443820
3323211758	3442139	3442139	3323231111	3446115	3446115	332420E226	3443822	3443822
3323211770	3442145	3442145	3323231116	3446117	3446117	332420EYVW	3443800	3443800
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3323211YVW	3442100	3442100	3323231YVW	3446100	3446100	332420G101	3443915	3443915
3323213	34422	34422	3323233 pt	34496	34496	332420G106	3443917	3443917
3323213101	3442220	3442220	3323233101	3446210	3446210	332420G111	3443919	3443919
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3323213231	3442241	3442241	3323233216	3446222	3446222	332420G136	3443934	3443934
3323213236	3442242	3442242	3323233216	3446222	3446222	332420G141	3443936	3443936
3323213241	3442243	3442243	3323233221	3446226	3446226	332420G246	3443951	3443951
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332431YWV	3411100	3411100	3325109101	3429812	3429812	332618WYWW pt	3399002 pt	3399002 pt
3324313	34112	34112	3325109106	3429822	3429822	332618WYWW pt	3496002	3496002
3324313100	3411200	3411200	3325109111	3429852	3429852	3327100 pt	35990 pt	35990 pt
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332431W	34110	34110	3325109199	3429898	3429898	3327100000	3599500	3599500
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332431WYWW	3411002	3411002	332510W pt	34290 pt	34290 pt	3327100YWW	3599002 pt	3599002 pt
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3324391 pt	34998 pt	34998 pt	332510WYWW pt	3429000 pt	3429000 pt	3327211000	3451100	3451100
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3324393	34122	34122	3326111106	3493106	3493106	3327215555	3451262	3451262
3324393100	3412200	3412200	3326111121	3493155	3493155	3327215666	3451239	3451239
3324395 pt	34123	34123	3326111221	3493157	3493157	3327215699	3451298	3451298
3324395 pt	34293	34293	3326111311	3493116	3493116	3327215YWV	3451200	3451200
3324395 pt	34443	34443	3326111326	3493199	3493199	332721W	34510	34510
3324395101 pt	3412313	3412313	3326111YWV	3493100	3493100	332721WYWW	3451000	3451000
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3324395106 pt	3429300	3429300	3326113101	3493210	3493210	3327221	34527	34527
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3324395YWV pt	3412300	3412300	332611W	34930	34930	3327221115	3452715	3452715
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3324397	35373 pt	35373 pt	332611WYWW	3493002	3493002	3327221159	3452759	3452759
3324397100	3537334	3537330 pt	332611YWV	3493002	3493002	3327221172	3452761	3452761
332439W pt	34120	34120	3326122	34952	34952	3327221178	3452762	3452762
332439W pt	34290 pt	34290 pt	3326122111	3495215	3495215	3327221184	3452763	3452763
332439W pt	34440 pt	34440 pt	3326122116	3495217	3495217	3327221YWV	3452700	3452700
332439W pt	34990 pt	34990 pt	3326122201	3495212	3495212	3327223	34524	34524
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332439WYWY pt	3412002	3412002	3326124221 pt	3495320 pt	3495320 pt	3327223155	3452445	3452445
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3325101116	3429216	3429216	3326181101	3496113	3496113	3327227109	3452609	3452609
3325101121	3429253	3429253	3326181103	3496115	3496115	3327227115	3452615	3452615
3325101133	3429255	3429255	3326181105	3496134	3496134	3327227135	3452635	3452635
3325101YWV	3429200	3429200	3326181107	3496152	3496152	3327227179	3452679	3452679
3325103 pt	34294	34294	3326181YWV	3496100	3496100	3327227YWV	3452600	3452600
3325103 pt	34991	34991	3326182	33992	33992	3327229	34528	34528
3325103101	3429412	3429412	3326182101	3399211	3399211	3327229105	3452831	3452831
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3325103121	3429417	3429417	3326183	34964	34964	3327229199	3452898	3452898
3325103125	3499117	3499117	3326183100	3496400	3496400	3327229YWV	3452800	3452800
3325103126	3429418	3429418	3326185	34965	34965	332722W	34520	34520
3325103128	3499143	3499198 pt	3326185100	3496500	3496500	332722WYWW	3452000	3452000
3325103129	3499141	3499141	3326187	34966	34966	332722WYWV	3452002	3452002
3325103131	3429419	3429419	3326187101	3496613	3496613	3328110	33980	33980
3325103133	3429422	3429422	3326187103	3496621	3496621	3328110100	3398000 pt	3398000 pt
3325103137	3499199	3499198 pt	3326187105	3496635	3496635	3328110YWW	3398000 pt	3398000 pt
3325103216	3429416	3429416	3326187107	3496671	3496671	3328110YWV	3398002	3398002
3325103336	3429423	3429423	3326187YWV	3496600	3496600	3328120	34790 pt	34790 pt
3325103341	3429424	3429424	3326189	33152 pt	33152 pt	3328120101	3479010	3479010
3325103346	3429427	3429427	3326189101	3315202	3315201 pt	3328120106	3479011	3479011
3325103361	3429437	3429437	3326189103	3315204	3315203 pt	3328120111	3479013	3479013
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3325103579	3429462	3429462	332618B	34968	34968	3328130	34710	34710
3325103581	3429464	3429464	332618B105	3496855	3496855	3328130100	3471000 pt	3471000 pt
3325103583	3429466	3429466	332618B217	3496883	3496883	3328130YWV	3471000 pt	3471000 pt
3325103685	3429471	3429471	332618B319	3496885	3496885	3328130YWY	3471002	3471002
3325103688	3429473	3429473	332618B401	3496882	3496882	3329111	34911	34911
3325103687	3429473	3429473	332618B403	3496851	3496851	332911101	3491111	3491111
3325103689	3429481	3429481	332618B407	3496863	3496863	3329111103	3491121	3491121
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332911305	3491221	3491221	332912N	3492N	3492N	332919WYVWV pt	3429000 pt	3429000 pt
332911307	3491223	3491223	332912N100	3492N00	3492N00	332919WYVWV pt	3494000 pt	3494000 pt
332911309	3491231	3491231	332912W pt	34920	34920	332919WYVWV pt	3499000 pt	3499000 pt
332911311	3491235	3491235	332912WYVWV pt	37280 pt	37280 pt	332919WYVWV pt	3429002 pt	3429002 pt
332911313	3491241	3491241	332912WYVWV pt	3492000	3492000	332919WYVWV pt	3494002 pt	3494002 pt
3329113215	3491243	3491243	332912WYVWV pt	3728000 pt	3728000 pt	332919WYVWV pt	3499002 pt	3499002 pt
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			332912WYVWV pt	3728002 pt	3728002 pt			
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332999A111	3499531	3499531						
332999A116	3499539	3499539						



# Plate Work Manufacturing

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



# U.S. CENSUS BUREAU

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Economics and Statistics Administration  
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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special



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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332313</b>	<b>Plate work mfg.</b>	<b>1 014</b>	<b>1 034</b>	<b>25 074</b>	<b>784 378</b>	<b>19 093</b>	<b>37 103</b>	<b>498 420</b>	<b>1 533 725</b>	<b>1 190 533</b>	<b>2 707 463</b>	<b>78 103</b>
344310	Fabricated plate work, boiler shops (pt)	N	1 034	25 074	784 378	19 093	37 103	498 420	1 533 725	1 190 533	2 707 463	78 103

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332313, PLATE WORK MFG</b>												
<b>United States</b>	<b>1</b>	<b>1 034</b>	<b>359</b>	<b>25 074</b>	<b>784 378</b>	<b>19 093</b>	<b>37 103</b>	<b>498 420</b>	<b>1 533 725</b>	<b>1 190 533</b>	<b>2 707 463</b>	<b>78 103</b>
Alabama	1	24	9	537	13 656	427	750	9 010	20 569	19 857	43 821	741
Arizona	1	14	3	242	7 526	188	370	4 306	9 820	7 963	17 779	753
California	1	68	22	1 335	47 531	1 005	1 942	28 315	102 933	74 689	178 690	3 878
Colorado	2	9	3	125	4 028	98	185	2 799	11 742	5 242	17 037	623
Connecticut	1	20	6	274	10 009	196	347	5 341	18 270	15 100	33 377	1 403
Florida	1	28	8	695	17 566	504	792	9 741	30 557	23 352	53 809	1 242
Georgia	1	13	4	144	4 087	99	200	2 285	9 859	10 024	19 871	710
Illinois	-	55	24	1 861	61 359	1 394	3 008	39 676	112 758	86 299	198 807	5 864
Indiana	-	31	11	763	22 181	553	1 069	13 989	37 851	36 634	74 411	2 426
Iowa	-	19	7	747	16 752	613	960	12 479	30 575	27 049	56 306	2 090
Kansas	-	14	9	596	16 673	462	849	11 214	38 706	33 547	67 015	1 852
Kentucky	-	10	5	426	11 133	359	677	8 076	27 764	13 096	40 660	1 084
Louisiana	-	18	5	703	17 798	607	971	10 805	55 307	25 274	76 829	2 233
Michigan	-	54	23	1 468	49 152	1 139	2 487	32 956	112 485	93 204	206 340	5 614
Minnesota	-	25	8	495	16 296	363	722	10 963	25 827	27 179	52 584	2 075
Mississippi	4	13	4	197	5 479	150	262	3 623	11 955	10 891	23 733	370
Missouri	-	15	8	629	23 335	435	1 028	12 797	41 650	28 598	69 619	2 956
Nebraska	-	10	2	172	4 515	131	277	3 084	10 291	8 766	18 975	1 573
New Jersey	-	17	6	343	12 657	233	594	7 156	25 086	16 043	41 514	1 534
New York	1	34	5	476	14 580	368	710	9 378	26 168	21 515	47 338	731
North Carolina	1	20	6	359	10 857	243	447	6 319	17 205	10 802	27 720	942
Ohio	-	96	38	2 379	78 624	1 777	3 603	50 635	137 403	141 927	277 690	6 355
Oklahoma	1	22	7	593	17 837	423	731	9 573	29 324	34 256	65 627	1 724
Pennsylvania	1	86	37	2 606	90 239	1 931	3 621	55 025	181 106	123 261	297 340	8 027
South Carolina	1	13	6	501	11 963	391	754	8 431	29 075	19 371	47 779	671
Tennessee	4	15	4	214	6 468	161	266	4 080	10 683	7 279	17 756	625
Texas	2	116	29	2 046	59 874	1 655	3 295	40 415	126 437	92 931	216 493	5 905
Virginia	-	17	9	703	21 441	542	1 064	13 480	33 197	26 400	59 187	3 355
Washington	3	20	5	238	7 377	185	298	4 877	12 738	8 249	20 908	375
Wisconsin	-	52	22	1 562	45 997	1 268	2 450	32 613	94 201	65 683	158 576	5 643

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332313, PLATE WORK MFG</b>		<b>332313, PLATE WORK MFG—Con.</b>	
Companies <sup>1</sup> . . . . . number..	1 014	Value added . . . . . \$1,000..	1 533 725
All establishments . . . . . number..	1 034	Total inventories, beginning of year . . . . . \$1,000..	327 278
Establishments with 1 to 19 employees . . . . . number..	675	Finished goods inventories, beginning of year . . . . . \$1,000..	36 899
Establishments with 20 to 99 employees . . . . . number..	313	Work-in-process inventories, beginning of year . . . . . \$1,000..	160 524
Establishments with 100 employees or more . . . . . number..	46	Materials and supplies inventories, beginning of year . . . . . \$1,000..	129 855
All employees . . . . . number..	25 074	Total inventories, end of year . . . . . \$1,000..	344 991
Total compensation <sup>2</sup> . . . . . \$1,000..	970 555	Finished goods inventories, end of year . . . . . \$1,000..	49 464
Annual payroll . . . . . \$1,000..	784 378	Work-in-process inventories, end of year . . . . . \$1,000..	164 754
Total fringe benefits . . . . . \$1,000..	186 177	Materials and supplies inventories, end of year . . . . . \$1,000..	130 773
Production workers, average for year . . . . . number..	19 093	Gross book value of total assets at beginning of year . . . . . \$1,000..	779 668
Production workers on March 15 . . . . . number..	19 048	Total capital expenditures (new and used) . . . . . \$1,000..	78 103
Production workers on May 15 . . . . . number..	18 904	Capital expenditures for buildings and other structures (new and used) . . . . . \$1,000..	15 639
Production workers on August 15 . . . . . number..	19 092	Capital expenditures for machinery and equipment (new and used) . . . . . \$1,000..	62 464
Production workers on November 15 . . . . . number..	19 328	Total retirements <sup>2</sup> . . . . . \$1,000..	18 917
Production-worker hours . . . . . 1,000..	37 103	Gross book value of total assets at end of year . . . . . \$1,000..	838 854
Production-worker wages . . . . . \$1,000..	498 420	Total depreciation during year <sup>2</sup> . . . . . \$1,000..	52 854
Total cost of materials . . . . . \$1,000..	1 190 533	Total rental payments <sup>2</sup> . . . . . \$1,000..	51 556
Cost of materials, parts, containers, etc., consumed . . . . . \$1,000..	1 006 542	Buildings and other structures rental payments <sup>2</sup> . . . . . \$1,000..	24 412
Cost of resales . . . . . \$1,000..	39 847	Machinery and equipment rental payments <sup>2</sup> . . . . . \$1,000..	27 144
Cost of fuels . . . . . \$1,000..	18 849	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> . . . . . \$1,000..	5 181
Cost of purchased electricity . . . . . \$1,000..	23 075	Response coverage ratio <sup>4</sup> . . . . . percent..	76
Cost of contract work . . . . . \$1,000..	102 220	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> . . . . . \$1,000..	16 840
Quantity of electricity purchased for heat and power . . . . . 1,000 kWh..	353 178	Response coverage ratio <sup>4</sup> . . . . . percent..	76
Quantity of electricity generated less sold for heat and power . . . . . 1,000 kWh..	-	Cost of purchased communications services <sup>3</sup> . . . . . \$1,000..	4 113
Total value of shipments . . . . . \$1,000..	2 707 463	Response coverage ratio <sup>4</sup> . . . . . percent..	76
Primary products value of shipments . . . . . \$1,000..	2 277 704	Cost of purchased legal services <sup>3</sup> . . . . . \$1,000..	4 008
Secondary products value of shipments . . . . . \$1,000..	299 976	Response coverage ratio <sup>4</sup> . . . . . percent..	76
Total miscellaneous receipts . . . . . \$1,000..	129 783	Cost of purchased accounting and bookkeeping services <sup>3</sup> . . . . . \$1,000..	3 567
Value of resales . . . . . \$1,000..	65 082	Response coverage ratio <sup>4</sup> . . . . . percent..	76
Contract receipts . . . . . \$1,000..	24 877	Cost of purchased advertising services <sup>3</sup> . . . . . \$1,000..	4 969
Other miscellaneous receipts . . . . . \$1,000..	39 824	Response coverage ratio <sup>4</sup> . . . . . percent..	76
Primary products specialization ratio . . . . . percent..	88	Cost of purchased software and other data processing services <sup>3</sup> . . . . . \$1,000..	1 602
Value of primary products shipments made in all industries . . . . . \$1,000..	2 842 958	Response coverage ratio <sup>4</sup> . . . . . percent..	76
Value of primary products shipments made in this industry . . . . . \$1,000..	2 277 704	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> . . . . . \$1,000..	1 377
Value of primary products shipments made in other industries . . . . . \$1,000..	565 254	Response coverage ratio <sup>4</sup> . . . . . percent..	76
Coverage ratio . . . . . percent..	80		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332313, PLATE WORK MFG</b>												
<b>All establishments</b> .....	1	1 034	359	25 074	784 378	19 093	37 103	498 420	1 533 725	1 190 533	2 707 463	78 103
Establishments with 1 to 4 employees .....	8	255	—	538	14 098	417	658	9 031	28 450	26 568	55 080	1 383
Establishments with 5 to 9 employees .....	6	213	—	1 433	42 251	1 071	1 873	26 627	78 382	68 565	146 851	4 158
Establishments with 10 to 19 employees .....	2	207	—	2 837	80 306	2 118	3 614	49 413	155 262	117 428	273 083	8 223
Establishments with 20 to 49 employees .....	1	230	230	7 141	215 103	5 456	10 449	139 808	426 892	318 981	744 562	23 970
Establishments with 50 to 99 employees .....	—	83	83	5 631	188 448	4 418	9 299	121 453	392 954	302 005	692 832	18 675
Establishments with 100 to 249 employees .....	—	42	42	6 054	194 603	4 513	9 398	122 364	364 239	281 528	636 049	17 770
Establishments with 250 to 499 employees .....	—	4	4	1 440	49 569	1 100	1 812	29 724	87 546	75 458	159 006	3 924
Establishments with 500 to 999 employees .....	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 1,000 to 2,499 employees .....	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more .....	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records <sup>2</sup> .....	9	379	—	1 931	46 548	1 460	2 145	29 701	88 204	83 000	171 121	4 604

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
332313	Plate work mfg .....	1 034	25 074	784 378	19 093	37 103	498 420	1 533 725	1 190 533	2 707 463	78 103

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332313</b>	<b>Fabricated steel plate work</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>2 842 958</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3323130	Fabricated steel plate (stacks and weldments) .....	N	X	X	2 842 958	N	X	X	N
33231301	Fabricated steel plate containers .....	N	X	X	291 605	N	X	X	N
3323130111	Fabricated steel plate containers (trash and other), less than 13 gal. ....	4	X	X	2 429	2	X	X	N
3323130116	Fabricated steel plate containers (trash and other), 13 gal to 79 gal .....	13	X	X	48 985	8	X	X	N
3323130121	Fabricated steel plate containers (trash and other), more than 79 gal .....	67	X	X	240 191	44	X	X	93 601
33231302	Fabricated steel plate sound control equipment .....	N	X	X	225 557	N	X	X	N
3323130226	Fabricated steel plate sound control equipment for jet engine test facilities (including hush houses, demountable run-up silencers, demountable test cells, etc.) .....	5	X	X	D	9	X	X	43 741
3323130231	Fabricated steel plate sound control equipment for gas turbine sound systems (enclosed) (including natural gas compression, electric generation, marine propulsion, etc.) .....	6	X	X	D	7	X	X	78 538
3323130236	Other fabricated steel plate sound control equipment (including sound panels, one piece enclosures, industrial silencers, and air duct silencers) .....	30	X	X	134 435	25	X	X	35 379
33231303	Weldments and fabricated steel plate for other purposes .....	N	X	X	1 938 664	N	X	X	N
3323130301	Fabricated steel plate shielding for use in nuclear reactor buildings .....	11	X	X	27 155	13	X	X	17 414
3323130346	Weldments and fabricated steel plate for other purposes .....	993	X	X	1 911 509	N	X	X	N
33231304	Fabricated steel plate pipe, penstocks, tunnel lining, stacks, and breaching .....	N	X	X	73 147	N	X	X	N
3323130406	Fabricated steel plate pipe, penstocks, tunnel lining, stacks, and breaching .....	40	X	X	73 147	59	X	X	114 603
3323130Y	Fabricated steel plate (stacks and weldments), nsk, total .....	N	X	X	313 985	N	X	X	N
3323130YWW	Fabricated steel plate (stacks and weldments), nsk for nonadministrative-record establishments .....	N	X	X	149 154	N	X	X	N
3323130YWY	Fabricated plate work (stacks and weldments), nsk, for administrative-record establishments .....	N	X	X	164 831	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Not applicable for this report]

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332313</b>	<b>PLATE WORK MFG</b>				
33290005	Fabricated metal pipe (except castings and forgings) .....	X	9 722	X	N
33291905	Fabricated metal valves and pipe fittings .....	X	5 905	X	N
332000A3	Fabricated metal parts specially designed for steel power boilers, n.e.c. (except castings and forgings) .....	X	D	X	N
33200039	All other fabricated metal products (except castings and forgings) .....	X	95 854	X	N
33151001	Iron and steel castings (rough and semifinished) .....	X	11 637	X	N
33152005	Aluminum and aluminum-base alloy castings (rough and semifinished) .....	X	-	X	N
33152003	Other nonferrous castings (rough and semifinished) .....	X	4 930	X	N
33210001	Forgings .....	X	7 938	X	N
33120057	Steel bars and bar shapes (except concrete reinforcing bars, castings, forgings, and fabricated metal products) .....	X	78 491	X	N
33120009	Steel concrete reinforcing bars .....	X	1 498	X	N
33120017	Steel sheet and strip, including tin plate .....	X	123 387	X	N
33120079	Steel plate .....	X	159 767	X	N
33120041	Wide flange steel structural beams .....	X	9 129	X	N
33120047	All other steel structural shapes (except sheet piling, castings, forgings, and fabricated steel products) .....	X	32 569	X	N
33120039	All other steel shapes and forms (including sheet piling, excluding castings, forgings, and fabricated metal products) .....	X	49 341	X	N
33140003	Nonferrous refinery shapes (except castings, forgings, and fabricated metal products) .....	X	D	X	N
33142135	Copper and copper-base alloy pipe and tube (except castings, forgings, and fabricated metal products) .....	X	D	X	N
33142141	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	269	X	N
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing .....	X	14 556	X	N
33100055	All other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	6 046	X	N
33100067	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	9 642	X	N
32551003	Paints, varnishes, lacquers, stains, shellacs, japans, enamels, and allied products .....	X	18 694	X	N
33399203	Welding electrodes .....	X	10 674	X	N
00970099	All other materials and components, parts, containers, and supplies .....	X	110 234	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	244 769	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It



includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332313 PLATE WORK MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing fabricated metal plate work by cutting, punching, bending, shaping, and welding purchased metal plate.

The data published with NAICS code 332313 include the following SIC industry:

3443 Fabricated plate work, boiler shops (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.



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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.

# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3321111	34625	34625	3321165281	3469989	3469989	3322127 pt.	37999 pt.	37999 pt.
332111101	3462511	3462511	3321165291	3469997	3469997	3322127101	3423611	3423611
332111206	3462513	3462513	3321165361	3469971	3469971	3322127111	3423621	3423621
332111311	3462515	3462515	3321165YVW	3469900	3469900	3322127116	3423631	3423631
332111416	3462517	3462517				3322127121	3423641	3423641
332111YVW	3462500	3462500	332116W	34690 pt.	34690 pt.	3322127131	3423681	3423681
			332116WYVW	3469000 pt.	3469000 pt.	3322127136	3423685	3423685
3321113	34626	34626	332116WYVW	3469002 pt.	3469002 pt.	3322127141	3799906	3799923 pt.
3321113101	3462611	3462611				3322127199	3423698	3423698
3321113106	3462613	3462613	3321170 pt.	34990 pt.	34990 pt.	3322127226	3524101	3524100 pt.
3321113111	3462616	3462616				3322127YVW pt.	3423600	3423600
3321113YVW	3462600	3462600	3321170 pt.	34996	34996	3322127YVW pt.	3524100 pt.	3524100 pt.
			3321170106	3499633	3499633	3322127YVW pt.	3799900 pt.	3799900 pt.
3321115	34627	34627	3321170211	3499655	3499655			
3321115101	3462712	3462712	3321170321	3499677	3499677	3322129 pt.	35455	35455
3321115106	3462716	3462716	3321170401	3499611	3499611	3322129 pt.	36992 pt.	36992 pt.
3321115YVW	3462700	3462700	3321170416	3499666	3499666	3322129101	3545511	3545511
			3321170426	3499688	3499688	3322129106	3545513	3545513
3321117	34628	34628	3321170YVW pt.	3499000 pt.	3499000 pt.	3322129111	3545515	3545515
3321117101	3462812	3462812	3321170YVW pt.	3499600	3499600	3322129116	3545517	3545517
3321117106	3462816	3462816	3321170YVW	3499002 pt.	3499002 pt.	3322129121	3545521	3545521
3321117YVW	3462800	3462800				3322129126	3545561	3545561
			3322111 pt.	34211	34211	3322129131	3545565	3545565
332111W	34620	34620	3322111 pt.	39141 pt.	39141 pt.	3322129146	3545577	3545577
332111WYVW	3462000	3462000				3322129161	3699255	3699200 pt.
332111YVW	3462002	3462002	3322111 pt.	39142 pt.	39142 pt.	3322129236	3545571	3545571
			332211101	3421111	3421111	3322129341	3545573	3545573
3321121	34635	34635	3322111103	3914245	3914270 pt.	3322129451	3545579	3545579
3321121101	3463521	3463521	3322111106	3914155	3914170 pt.	3322129YVW pt.	3545500	3545500
3321121206	3463523	3463523	3322111211	3421125	3421125	3322129YVW pt.	3699200 pt.	3699200 pt.
3321121311	3463525	3463525	3322111222	3421130	3421130			
3321121316	3463529	3463529	3322111326	3421153	3421153	332212W pt.	34230	34230
3321121YVW	3463500	3463500	3322111331	3421155	3421155	332212W pt.	35230 pt.	35230 pt.
			3322111336	3421157	3421157	332212W pt.	35240 pt.	35240 pt.
3321122	34639	34639	3322111344	3421159	3421159	332212W pt.	35450 pt.	35450 pt.
3321122101	3463915	3463915	3322111455	3421180	3421180			
3321122106	3463925	3463925	3322111YVW pt.	3421100	3421100	332212W pt.	36990 pt.	36990 pt.
3321122111	3463935	3463935	3322111YVW pt.	3914200 pt.	3914200 pt.			
3321122YVW	3463900	3463900				332212W pt.	37990 pt.	37990 pt.
			3322113	34212	34212	332212W pt.	3990 pt.	3990 pt.
332112W	34630	34630	3322113101	3421205	3421205	332212WYVW pt.	3423000	3423000
332112WYVW	3463000	3463000	3322113106	3421210	3421210	332212WYVW pt.	3523000 pt.	3523000 pt.
332112YVW	3463002	3463002	3322113111	3421216	3421216	332212WYVW pt.	3524000 pt.	3524000 pt.
			3322113YVW	3421200	3421200	332212WYVW pt.	3545000 pt.	3545000 pt.
3321140 pt.	34490 pt.	34490 pt.				332212WYVW pt.	3699000 pt.	3699000 pt.
3321140101	34498	34498	332211W pt.	34210	34210	332212WYVW pt.	3799000 pt.	3799000 pt.
3321140206	3449813	3449813				332212WYVW pt.	3999000 pt.	3999000 pt.
3321140311	3449815	3449815	332211W pt.	39140 pt.	39140 pt.	332212WYVW pt.	3423002	3423002
3321140416	3449817	3449817	332211WYVW pt.	3421000	3421000	332212WYVW pt.	3523002 pt.	3523002 pt.
3321140YVW pt.	3449000 pt.	3449000 pt.	332211WYVW pt.	3914000 pt.	3914000 pt.	332212WYVW pt.	3524002 pt.	3524002 pt.
3321140YVW pt.	3449800	3449800	332211WYVW pt.	3421002	3421002	332212WYVW pt.	3545002 pt.	3545002 pt.
3321140YVW	3449002 pt.	3449002 pt.	332211WYVW pt.	3914002 pt.	3914002 pt.	332212WYVW pt.	3699002 pt.	3699002 pt.
						332212WYVW pt.	3799002 pt.	3799002 pt.
3321150 pt.	34660	34660	3322121 pt.	34231	34231	332212WYVW pt.	3999002 pt.	3999002 pt.
3321150 pt.	34661	34661						
3321150101	34662	34662	3322121 pt.	39999 pt.	39999 pt.	3322130	34250	34250
3321150103 pt.	3466105	3466105	3322121101	3423112	3423112	3322130101	3425011	3425011
3321150103 pt.	3466200 pt.	3466200	3322121206	3423113	3423113	3322130106	3425013	3425013
3321150103 pt.	3466200 pt.	3466230	3322121311	3423121	3423121	3322130111	3425016	3425016
3321150103 pt.	3466200 pt.	3466232	3322121351	3423141	3423141	3322130116	3425018	3425018
3321150106 pt.	3466123 pt.	3466120	3322121356	3423151	3423151	3322130122	3425019	3425019
3321150106 pt.	3466123 pt.	3466122	3322121361	3423155	3423155	3322130226	3425031	3425031
3321150YVW pt.	3466000	3466000	3322121365	3999971	3999971	3322130231	3425035	3425035
3321150YVW pt.	3466100	3466100	3322121399	3423197	3423197	3322130244	3425036	3425036
3321150YVW	3466002	3466002	3322121416	3423131	3423131	3322130255	3425039	3425039
			3322121421	3423133	3423133	3322130265	3425041	3425041
3321161	34692	34692				3322130361	3425043	3425043
3321161101	3469201	3469201	3322121426	3423136	3423136	3322130365	3425045	3425045
3321161115	3469215	3469215	3322121431	3423137	3423137	3322130377	3425049	3425049
3321161205	3469205	3469205	3322121436	3423138	3423138	3322130YVW	3425000	3425000
3321161311	3469211	3469211	3322121444	3423139	3423139	3322130YVW	3425002	3425002
3321161331	3469231	3469231	3322121YVW pt.	3423100	3423100			
3321161352	3469252	3469252	3322121YVW pt.	3999900 pt.	3999900 pt.	3322141	34694	34694
3321161354	3469253	3469253				3322141111	3469411	3469411
3321161388	3469288	3469288	3322123 pt.	34234	34234	3322141121	3469414	3469414
3321161398	3469298	3469298				3322141231	3469417	3469417
3321161421	3469220	3469220	3322123 pt.	3523E pt.	3523E pt.	3322141241	3469429	3469429
			3322123101	3423414	3423414	3322141YVW	3469400	3469400
3321161441	3469241	3469241	3322123106	3423433	3423433			
3321161525	3469225	3469225	3322123111	3423444	3423444	3322143	34695	34695
3321161561	3469261	3469261	3322123121	3423498	3423498	3322143101	3469507	3469507
3321161571	3469271	3469271	3322123216	3523E80	3523E00 pt.	3322143211	3469509	3469509
3321161584	3469284	3469284	3322123YVW pt.	3423400	3423400	3322143221	3469515	3469515
3321161YVW	3469200	3469200	3322123YVW pt.	3523E00 pt.	3523E00 pt.	3322143231 pt.	3469525 pt.	3469521
						3322143231 pt.	3469525 pt.	3469524
3321163	34696	34696	3322125	34235	34235	3322143241 pt.	3469599 pt.	3469527
3321163100	3469600	3469600	3322125101	3423511	3423511	3322143241 pt.	3469599 pt.	3469598
			3322125206	3423512	3423512	3322143YVW	3469500	3469500
3321165	34699	34699	3322125311	3423522	3423522			
3321165101	3469941	3469941	3322125316	3423522	3423522	332214W	34690 pt.	34690 pt.
3321165211	3469948	3469948	3322125321	3423531	3423531	332214WYVW	3469000 pt.	3469000 pt.
3321165221	3469951	3469951	3322125333	3423541	3423541	332214WYVW	3469002 pt.	3469002 pt.
3321165231	3469959	3469959	3322125YVW	3423500	3423500			
3321165241	3469961	3469961						
3321165251	3469969	3469969	3322127 pt.	34236	34236			
3321165271	3469985	3469985	3322127 pt.	35241 pt.	35241 pt.			

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3323111	34481	34481	3323213251	3442298	3442298	3323233YVW pt	3446200	3446200
332311106	3448117	3448117	3323213306	3442221	3442221	3323233YVW pt	3449600	3449600
3323111111	3448118	3448118	3323213YVW	3442200	3442200	3323235	34463	34463
332311201	3448115	3448115	3323215 pt	24991 pt	24991 pt	3323235101	3446310	3446310
332311YVW	3448100	3448100	3323215 pt	34423	34423	3323235106	3446312	3446312
3323113	34482	34482	3323215 pt	34497	34497	3323235211	3446320	3446320
3323113101	3448211	3448211	332321501 pt	3442321	3442321	3323235216	3446322	3446322
3323113106	3448214	3448214	332321501 pt	3449773	3449773	3323235YVW	3446300	3446300
3323113111	3448215	3448215	332321506 pt	2499141	2499141	3323237	34464	34464
3323113216	3448216	3448216	332321506 pt	3442325	3442325	3323237101	3446410	3446410
3323113221	3448217	3448217	332321506 pt	3449775	3449775	3323237106	3446413	3446413
3323113226	3448218	3448218	3323215111 pt	3442351	3442351	3323237111	3446416	3446416
3323113231	3448226	3448226	3323215111 pt	3449779	3449779	3323237116	3446418	3446418
3323113236	3448227	3448227	3323215YVW pt	2499100 pt	2499100 pt	3323237YVW	3446400	3446400
3323113241	3448254	3448254	3323215YVW pt	3442300	3442300	3323239 pt	34465	34465
3323113YVW	3448200	3448200	3323215YVW pt	3449700	3449700	3323239 pt	3523E pt	3523E pt
3323114W	34480	34480	3323217	34424	34424	3323239106	3446512	3446512
3323114YVW	3448000	3448000	3323217101	3442411	3442411	3323239111	3446530	3446530
3323114YVW	3448002	3448002	3323217106	3442412	3442412	3323239201	3446510	3446510
3323121 pt	34411	34411	3323217111	3442413	3442413	3323239311	3523E84	3523E00 pt
3323121 pt	34494	34494	3323217YVW	3442400	3442400	3323239YVW pt	3446500	3446500
3323121101 pt	3441141	3441141	3323219	34425	34425	3323239YVW pt	3523E00 pt	3523E00 pt
3323121101 pt	3449443	3449443	3323219101	3442511	3442511	332323W pt	34460	34460
3323121206 pt	3441142	3441142	3323219106	3442512	3442512	332323W pt	34490 pt	34490 pt
3323121206 pt	3449447	3449447	3323219111	3442551	3442551	332323W pt	35230 pt	35230 pt
3323121211 pt	3441143	3441143	3323219YVW	3442500	3442500	332323WYVW pt	3446000	3446000
3323121211 pt	3449452	3449452	332321W pt	24990 pt	24990 pt	332323WYVW pt	3449000 pt	3449000 pt
3323121216	3441144	3441144	332321W pt	34420	34420	332323WYVW pt	3523000 pt	3523000 pt
3323121221	3441146	3441146	332321W pt	34490 pt	34490 pt	332323WYVW pt	3446002	3446002
3323121226	3441171	3441171	332321WYVW pt	2499000 pt	2499000 pt	332323WYVW pt	3449002 pt	3449002 pt
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3323121YVW pt	3441100	3441100	332321WYVW pt	3449000 pt	3449000 pt	3324101	34431	34431
3323121YVW pt	3449400	3449400	332321WYVW pt	2499002 pt	2499002 pt	3324101101	3443113	3443113
3323123	34412	34412	332321WYVW pt	3442002	3442002	3324101206	3443118	3443118
3323123100	3441200	3441200	332321WYVW pt	3449002 pt	3449002 pt	3324101311	3443155	3443155
3323125	34413	34413	3323221	34441	34441	3324101YVW	3443100	3443100
3323125106	3441320	3441320	3323221101	3444121	3444121	3324105	34433	34433
3323125111	3441323	3441323	3323221106	3444123	3444123	3324105101	3443308	3443308
3323125116	3441326	3441326	3323221211	3444127	3444127	3324105106 pt	3443331 pt	3443331 pt
3323125121	3441329	3441329	3323221216	3444129	3444129	3324105106 pt	3443331 pt	3443331 pt
3323125126	3441359	3441359	3323221YVW	3444100	3444100	3324105111 pt	3443332 pt	3443332 pt
3323125131	3441384	3441384	3323223	34442	34442	3324105111 pt	3443332 pt	3443332 pt
3323125136	3441398	3441398	3323223101	3444213	3444213	3324105126 pt	3443333 pt	3443333 pt
3323125201	3441316	3441316	3323223106	3444215	3444215	3324105126 pt	3443333 pt	3443333 pt
3323125YVW	3441300	3441300	3323223111	3444219	3444219	3324105131 pt	3443336 pt	3443336 pt
332312W pt	34410	34410	3323223YVW	3444200	3444200	3324105131 pt	3443336 pt	3443336 pt
332312W pt	34490 pt	34490 pt	3323227	34444	34444	3324105146	3443339	3443339
332312WYVW pt	3441000	3441000	3323227101	3444411	3444411	3324105151 pt	3443342 pt	3443342 pt
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332312WYVW pt	3441002	3441002	3323227211	3444423	3444423	3324105161 pt	3443343 pt	3443343 pt
332312WYVW pt	3449002 pt	3449002 pt	3323227216	3444429	3444429	3324105161 pt	3443343 pt	3443343 pt
3323130 pt	34430 pt	34430 pt	3323227216	3444429	3444429	3324105171 pt	3443345 pt	3443345 pt
3323130 pt	34432 pt	34432 pt	3323227221	3444431	3444431	3324105171 pt	3443345 pt	3443345 pt
3323130111	3443244	3443244	3323227YVW	3444400	3444400	3324105181	3443348	3443348
3323130116	3443246	3443246	3323229	34445	34445	3324105186	3443351	3443351
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3323130226	3443252	3443252	3323229111	3444517	3444517	3324105YVW	3443300	3443300
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3323130236	3443256	3443256	3323229121	3444519	3444519	332410WYVW	3443000 pt	3443000 pt
3323130301	3443221	3443221	3323229201	3444505	3444505	332410WYVW	3443002 pt	3443002 pt
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3323211119	3442121	3442121	332322C206	3444813	3444813	332420A	34436	34436
3323211201	3442105	3442105	332322C311	3444819	3444819	332420A100	3443600	3443600
3323211204	3442107	3442107	332322CYVW	3444800	3444800	332420C	34437	34437
3323211207	3442109	3442109	332322E	34449	34449	332420C101	3443712	3443712
3323211222	3442122	3442122	332322E101	3444931	3444931	332420C106	3443715	3443715
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3323211331	3442125	3442125	332322E321	3444955	3444955	332420C121	3443748	3443748
3323211334	3442126	3442126	332322E326	3444962	3444962	332420C126	3443750	3443750
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3323211443	3442130	3442130	332322E336	3444998	3444998	332420E	34438	34438
3323211446	3442131	3442131	332322EYVW	3444900	3444900	332420E101	3443803	3443803
3323211549	3442132	3442132	332322W	34440 pt	34440 pt	332420E106	3443805	3443805
3323211552	3442134	3442134	332322WYVW	3444000 pt	3444000 pt	332420E211	3443808	3443808
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3323211664	3442143	3442143	3323231106	3446112	3446112	332420E226	3443822	3443822
3323211667	3442144	3442144	3323231111	3446115	3446115	332420EYVW	3443800	3443800
3323211758	3442139	3442139	3323231116	3446117	3446117	332420G	34439	34439
3323211770	3442145	3442145	3323231201	3446110	3446110	332420G101	3443915	3443915
3323211837	3442127	3442127	3323231YVW	3446100	3446100	332420G106	3443917	3443917
332321YVW	3442100	3442100	3323233 pt	34496	34496	332420G111	3443919	3443919
3323213	34422	34422	3323233101	3449610	3449610	332420G116	3443923	3443923
3323213101	3442220	3442220	3323233101 pt	3449611	3449611	332420G121	3443931	3443931
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3323213116	3442224	3442224	3323233211	3446220	3446220	332420G131	3443933	3443933
3323213121	3442230	3442230	3323233216	3446222	3446222	332420G136	3443934	3443934
3323213226	3442235	3442235	3323233216	3446222	3446222	332420G141	3443936	3443936
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332420G356	3443958	3443958	3325105	34296	34296	332618BYWV	3496800	3496800
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3324311YWV	3411100	3411100	3325109101	3429812	3429812	332618WYWW pt	3399002 pt	3399002 pt
3324313	34112	34112	3325109106	3429822	3429822	332618WYWW pt	3496002	3496002
3324313100	3411200	3411200	3325109111	3429852	3429852	3327100 pt	35990 pt	35990 pt
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332431W	34110	34110	3325109199	3429898	3429898	3327100000	3599500	3599500
332431WYWW	3411000	3411000	3325109YWV	3429800 pt	3429800 pt	3327100YWW	3599000 pt	3599000 pt
332431WYWY	3411002	3411002	332510W pt	34290 pt	34290 pt	3327100YWY	3599002 pt	3599002 pt
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3324391 pt	34998 pt	34998 pt	332510WYWW pt	3429000 pt	3429000 pt	3327211000	3451100	3451100
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3324391306	3499821	3499821	332510WYWW pt	3429002 pt	3429002 pt	3327215111	3451231	3451231
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3324391YWV pt	3412100 pt	3412100 pt	3326111	34931	34931	3327215333	3451252	3451252
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3324393	34122	34122	3326111106	3493106	3493106	3327215555	3451262	3451262
3324393100	3412200	3412200	3326111216	3493155	3493155	3327215666	3451239	3451239
3324395 pt	34123	34123	3326111221	3493157	3493157	3327215699	3451298	3451298
3324395 pt	34293	34293	3326111311	3493116	3493116	3327215YWV	3451200	3451200
3324395 pt	34443	34443	3326111326	3493199	3493199	332721W	34510	34510
3324395101 pt	3412313	3412313	3326111YWV	3493100	3493100	332721WYWW	3451000	3451000
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3324395106 pt	3429300	3429300	3326113101	3493210	3493210	3327221	34527	34527
3324395106 pt	3444324	3444324	3326113106	3493220	3493220	3327221101	3452701	3452701
3324395199	3412319	3412319	3326113YWV	3493200	3493200	3327221106	3452706	3452706
3324395YWV pt	3412300	3412300	332611W	34930	34930	3327221115	3452715	3452715
3324395YWV pt	3444300	3444300	332611WYWW	3493000	3493000	3327221145	3452745	3452745
3324397	35373 pt	35373 pt	332611WYWY	3493002	3493002	3327221159	3452759	3452759
3324397100	3537334	3537330 pt	3326122	34952	34952	3327221172	3452761	3452761
332439W pt	34120	34120	3326122111	3495215	3495215	3327221178	3452762	3452762
332439W pt	34290 pt	34290 pt	3326122116	3495217	3495217	3327221184	3452763	3452763
332439W pt	34440 pt	34440 pt	3326122201	3495212	3495212	3327221YWV	3452700	3452700
332439W pt	34990 pt	34990 pt	3326122206	3495214	3495214	3327223	34524	34524
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332439WYWY pt	3412002	3412002	3326124222 pt	3495320 pt	3495320 pt	3327223199	3452489	3452489
332439WYWY pt	3429002 pt	3429002 pt	3326124226	3495321	3495321	3327223YWV	3452400	3452400
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3325101121	3429253	3429253	3326181105	3496134	3496134	3327227135	3452635	3452635
3325101133	3429255	3429255	3326181107	3496152	3496152	3327227179	3452679	3452679
3325101YWV	3429200	3429200	3326181YWV	3496100	3496100	3327227YWV	3452600	3452600
3325103 pt	34294	34294	3326182	33992	33992	3327229	34528	34528
3325103 pt	34991	34991	3326182101	3399211	3399211	3327229105	3452831	3452831
3325103101	3429412	3429412	3326182106	3399298	3399298	3327229115	3452811	3452811
3325103111 pt	3429415 pt	3429413	3326182YWV	3399200	3399200	3327229135	3452821	3452821
3325103111 pt	3429415 pt	3429414	3326183	34964	34964	3327229199	3452898	3452898
3325103121	3429417	3429417	3326183100	3496400	3496400	3327229YWV	3452800	3452800
3325103125	3499117	3499117	3326185	34965	34965	332722W	34520	34520
3325103126	3429418	3429418	3326185100	3496500	3496500	332722WYWW	3452000	3452000
3325103128	3499143	3499198 pt	3326187	34966	34966	332722WYWY	3452002	3452002
3325103129	3499141	3499141	3326187101	3496613	3496613	3328110	33980	33980
3325103131	3429419	3429419	3326187103	3496621	3496621	3328110100	3398000 pt	3398000 pt
3325103133	3429422	3429422	3326187105	3496635	3496635	3328110YWW	3398000 pt	3398000 pt
3325103137	3499199	3499198 pt	3326187107	3496671	3496671	3328110YWY	3398002	3398002
3325103216	3429416	3429416	3326187YWV	3496600	3496600	3328120	34790 pt	34790 pt
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3325103341	3429424	3429424	3326189101	3315202	3315201 pt	3328120106	3479011	3479011
3325103346	3429427	3429427	3326189103	3315204	3315203 pt	3328120111	3479013	3479013
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3325103573	3429454	3429454	3326189YWV	3315200 pt	3315220 pt	3328120YWY	3479002 pt	3479002 pt
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3325103581	3429464	3429464	332618B217	3496883	3496883	3328130YWW	3471000 pt	3471000 pt
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332911305	3491221	3491221	332912N	3492N	3492N	332919WYVWV pt	3429000 pt	3429000 pt
3329113107	3491223	3491223	332912N100	3492N00	3492N00	332919WYVWV pt	3494000 pt	3494000 pt
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332999A116	3499539	3499539						



# Metal Window and Door Manufacturing

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



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**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**

Under Secretary for  
Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division



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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Compan-ies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufac-ture (\$1,000)	Cost of materials (\$1,000)	Value of ship-ments (\$1,000)	Total capital ex-pen-ditures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332321</b>	<b>Metal window &amp; door mfg . . . . .</b>	<b>1 247</b>	<b>1 408</b>	<b>73 282</b>	<b>1 920 859</b>	<b>52 673</b>	<b>108 794</b>	<b>1 151 632</b>	<b>4 594 765</b>	<b>5 335 378</b>	<b>9 923 752</b>	<b>163 577</b>
249940	Wood products, n.e.c. (pt) . . . . .	N	—	—	—	—	—	—	—	—	—	—
344200	Metal doors, sash, & trim . . . . .	N	1 375	71 308	1 856 744	51 374	105 855	1 114 420	4 426 112	5 139 832	9 559 188	159 110
344930	Miscellaneous metal work (pt) . . . . .	N	33	1 974	64 115	1 299	2 939	37 212	168 653	195 546	364 564	4 467

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufac-ture (\$1,000)	Cost of materials (\$1,000)	Value of ship-ments (\$1,000)	Total capital ex-pen-ditures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332321, METAL WINDOW &amp; DOOR MFG</b>												
<b>United States . . . . .</b>	<b>-</b>	<b>1 408</b>	<b>604</b>	<b>73 282</b>	<b>1 920 859</b>	<b>52 673</b>	<b>108 794</b>	<b>1 151 632</b>	<b>4 594 765</b>	<b>5 335 378</b>	<b>9 923 752</b>	<b>163 577</b>
Alabama . . . . .	-	29	11	934	24 795	696	1 629	15 986	55 928	58 226	112 532	3 790
Arizona . . . . .	-	29	12	1 812	45 320	1 214	2 729	26 093	106 710	103 534	210 194	3 151
Arkansas . . . . .	-	25	10	1 752	47 926	1 231	2 692	29 074	123 466	151 871	273 411	4 208
California . . . . .	-	177	83	7 521	198 893	5 385	10 812	110 313	428 429	460 700	883 131	16 980
Colorado . . . . .	-	14	5	397	10 196	271	555	5 997	27 360	23 802	51 985	602
Connecticut . . . . .	-	11	4	632	18 842	333	777	8 842	42 870	38 083	81 403	949
Florida . . . . .	-	125	44	5 229	122 292	3 468	7 101	68 268	284 325	321 388	608 010	6 813
Georgia . . . . .	-	45	28	3 638	91 322	2 704	5 503	58 127	214 040	295 223	508 709	14 929
Illinois . . . . .	-	63	20	2 805	85 123	1 881	4 246	45 188	200 049	184 568	384 961	6 589
Indiana . . . . .	-	39	21	2 657	69 191	2 152	4 305	46 493	207 421	300 878	507 634	6 143
Iowa . . . . .	-	12	6	1 488	39 735	1 142	2 308	29 132	96 278	98 766	195 714	6 578
Kansas . . . . .	-	21	12	1 352	28 929	1 031	1 953	17 375	77 198	109 276	186 141	3 934
Kentucky . . . . .	1	12	3	253	6 649	191	394	3 901	13 225	10 607	23 709	2 221
Louisiana . . . . .	1	16	4	318	7 113	239	494	4 088	12 774	17 328	30 094	343
Maryland . . . . .	2	15	3	255	7 932	164	341	4 483	14 087	11 240	25 290	483
Massachusetts . . . . .	1	22	8	441	12 604	282	545	6 601	24 783	26 604	51 375	486
Michigan . . . . .	1	48	22	1 636	50 485	1 158	2 474	28 199	108 666	155 564	264 632	3 218
Minnesota . . . . .	-	25	14	1 173	31 531	746	1 431	15 142	77 408	77 442	152 921	2 661
Mississippi . . . . .	-	17	6	1 051	18 022	935	1 890	14 530	39 528	44 032	84 495	1 991
Missouri . . . . .	-	29	14	2 816	69 953	1 811	4 015	34 658	170 373	115 491	282 629	4 821
Nebraska . . . . .	-	10	4	481	11 942	342	627	7 766	42 135	62 085	101 661	823
Nevada . . . . .	3	9	2	131	3 379	95	193	2 132	7 029	8 417	15 635	150
New Jersey . . . . .	1	41	17	1 169	33 955	813	1 653	18 180	66 096	55 964	122 107	947
New Mexico . . . . .	1	8	3	114	2 725	91	182	1 800	4 442	4 889	9 634	119
New York . . . . .	2	94	32	2 224	58 894	1 603	3 232	35 339	141 948	119 693	261 464	3 235
North Carolina . . . . .	-	21	10	1 405	30 251	1 117	2 168	20 427	64 302	107 408	171 402	1 839
Ohio . . . . .	-	70	33	4 547	130 270	3 345	6 781	86 127	404 312	486 163	897 278	14 596
Oklahoma . . . . .	-	11	5	1 397	37 801	843	1 639	19 772	100 254	82 236	186 858	2 826
Oregon . . . . .	-	20	12	1 304	34 957	1 011	2 040	22 699	82 352	122 183	203 966	2 508
Pennsylvania . . . . .	-	65	33	4 423	127 049	3 219	6 581	75 878	292 049	405 510	699 029	10 674
South Carolina . . . . .	1	11	5	441	10 107	348	680	7 121	25 009	33 558	58 787	400
Tennessee . . . . .	-	36	21	4 162	109 374	2 916	6 158	70 758	330 492	245 973	573 317	10 923
Texas . . . . .	-	107	45	6 952	162 372	5 297	10 976	98 801	314 663	482 011	795 848	11 105
Utah . . . . .	-	9	3	192	6 792	105	215	2 626	14 119	14 869	28 942	533
Virginia . . . . .	-	16	5	644	18 347	478	1 028	12 223	55 941	67 196	122 458	995
Washington . . . . .	1	28	11	1 269	35 900	953	1 962	22 736	72 180	102 611	175 373	1 870
Wisconsin . . . . .	-	37	20	2 724	81 041	1 927	3 912	49 344	188 088	211 881	398 437	4 493

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.



**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332321, METAL WINDOW &amp; DOOR MFG</b>		<b>332321, METAL WINDOW &amp; DOOR MFG—Con.</b>	
Companies <sup>1</sup> . . . . . number..	1 247	Value added . . . . . \$1,000..	4 594 765
All establishments . . . . . number..	1 408	Total inventories, beginning of year . . . . . \$1,000..	1 066 937
Establishments with 1 to 19 employees . . . . . number..	804	Finished goods inventories, beginning of year . . . . . \$1,000..	300 267
Establishments with 20 to 99 employees . . . . . number..	408	Work-in-process inventories, beginning of year . . . . . \$1,000..	155 869
Establishments with 100 employees or more . . . . . number..	196	Materials and supplies inventories, beginning of year . . . . . \$1,000..	610 801
All employees . . . . . number..	73 282	Total inventories, end of year . . . . . \$1,000..	1 107 739
Total compensation <sup>2</sup> . . . . . \$1,000..	2 360 187	Finished goods inventories, end of year . . . . . \$1,000..	304 217
Annual payroll . . . . . \$1,000..	1 920 859	Work-in-process inventories, end of year . . . . . \$1,000..	158 310
Total fringe benefits . . . . . \$1,000..	439 328	Materials and supplies inventories, end of year . . . . . \$1,000..	645 212
Production workers, average for year . . . . . number..	52 673	Gross book value of total assets at beginning of year . . . . . \$1,000..	2 061 041
Production workers on March 15 . . . . . number..	50 730	Total capital expenditures (new and used) . . . . . \$1,000..	163 577
Production workers on May 15 . . . . . number..	52 882	Capital expenditures for buildings and other structures (new and used) . . . . . \$1,000..	35 849
Production workers on August 15 . . . . . number..	53 482	Capital expenditures for machinery and equipment (new and used) . . . . . \$1,000..	127 728
Production workers on November 15 . . . . . number..	53 598	Total retirements <sup>2</sup> . . . . . \$1,000..	42 550
Production-worker hours . . . . . 1,000..	108 794	Gross book value of total assets at end of year . . . . . \$1,000..	2 182 068
Production-worker wages . . . . . \$1,000..	1 151 632	Total depreciation during year <sup>2</sup> . . . . . \$1,000..	148 041
Total cost of materials . . . . . \$1,000..	5 335 378	Total rental payments <sup>2</sup> . . . . . \$1,000..	121 021
Cost of materials, parts, containers, etc., consumed . . . . . \$1,000..	4 852 307	Buildings and other structures rental payments <sup>2</sup> . . . . . \$1,000..	58 693
Cost of resales . . . . . \$1,000..	349 353	Machinery and equipment rental payments <sup>2</sup> . . . . . \$1,000..	62 328
Cost of fuels . . . . . \$1,000..	24 307	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> . . . . . \$1,000..	9 447
Cost of purchased electricity . . . . . \$1,000..	54 204	Response coverage ratio <sup>4</sup> . . . . . percent..	69
Cost of contract work . . . . . \$1,000..	55 207	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> . . . . . \$1,000..	36 396
Quantity of electricity purchased for heat and power . . . . . 1,000 kWh..	900 025	Response coverage ratio <sup>4</sup> . . . . . percent..	69
Quantity of electricity generated less sold for heat and power . . . . . 1,000 kWh..	—	Cost of purchased communications services <sup>3</sup> . . . . . \$1,000..	23 826
Total value of shipments . . . . . \$1,000..	9 923 752	Response coverage ratio <sup>4</sup> . . . . . percent..	69
Primary products value of shipments . . . . . \$1,000..	8 508 266	Cost of purchased legal services <sup>3</sup> . . . . . \$1,000..	12 972
Secondary products value of shipments . . . . . \$1,000..	846 003	Response coverage ratio <sup>4</sup> . . . . . percent..	69
Total miscellaneous receipts . . . . . \$1,000..	569 483	Cost of purchased accounting and bookkeeping services <sup>3</sup> . . . . . \$1,000..	6 724
Value of resales . . . . . \$1,000..	465 356	Response coverage ratio <sup>4</sup> . . . . . percent..	69
Contract receipts . . . . . \$1,000..	9 009	Cost of purchased advertising services <sup>3</sup> . . . . . \$1,000..	36 625
Other miscellaneous receipts . . . . . \$1,000..	95 118	Response coverage ratio <sup>4</sup> . . . . . percent..	69
Primary products specialization ratio . . . . . percent..	90	Cost of purchased software and other data processing services <sup>3</sup> . . . . . \$1,000..	5 322
Value of primary products shipments made in all industries . . . . . \$1,000..	8 834 204	Response coverage ratio <sup>4</sup> . . . . . percent..	69
Value of primary products shipments made in this industry . . . . . \$1,000..	8 508 266	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> . . . . . \$1,000..	10 036
Value of primary products shipments made in other industries . . . . . \$1,000..	325 938	Response coverage ratio <sup>4</sup> . . . . . percent..	69
Coverage ratio . . . . . percent..	96		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332321, METAL WINDOW &amp; DOOR MFG</b>												
<b>All establishments .....</b>	-	<b>1 408</b>	<b>604</b>	<b>73 282</b>	<b>1 920 859</b>	<b>52 673</b>	<b>108 794</b>	<b>1 151 632</b>	<b>4 594 765</b>	<b>5 335 378</b>	<b>9 923 752</b>	<b>163 577</b>
Establishments with 1 to 4 employees .....	8	404	-	867	20 403	648	1 135	12 239	42 395	63 109	106 217	1 924
Establishments with 5 to 9 employees .....	6	231	-	1 526	38 591	1 091	1 978	22 330	83 732	117 385	202 007	2 886
Establishments with 10 to 19 employees .....	3	169	-	2 273	56 918	1 519	2 830	30 542	136 924	166 848	303 826	4 334
Establishments with 20 to 49 employees .....	1	262	262	8 267	222 070	5 717	11 453	123 107	475 506	517 114	989 357	15 306
Establishments with 50 to 99 employees .....	-	146	146	10 438	274 615	7 482	15 164	156 763	660 850	764 608	1 420 950	21 027
Establishments with 100 to 249 employees .....	-	133	133	20 625	527 245	14 588	29 763	306 168	1 299 797	1 696 179	2 992 884	52 814
Establishments with 250 to 499 employees .....	-	46	46	15 852	417 500	11 940	25 510	269 794	983 560	1 140 386	2 124 825	34 748
Establishments with 500 to 999 employees .....	-	15	15	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	2	2	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	553	-	2 359	52 733	1 734	2 906	31 022	106 623	150 469	258 289	4 267

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332321</b>	<b>Metal window &amp; door mfg .</b>	<b>1 408</b>	<b>73 282</b>	<b>1 920 859</b>	<b>52 673</b>	<b>108 794</b>	<b>1 151 632</b>	<b>4 594 765</b>	<b>5 335 378</b>	<b>9 923 752</b>	<b>163 577</b>
3323211	Metal doors (except storm doors) ....	329	30 359	841 131	21 770	45 044	513 652	2 282 941	2 632 835	4 908 873	68 759
3323213	Metal windows (except storm sash) ..	205	23 133	564 154	16 878	35 088	332 705	1 243 122	1 148 434	2 385 319	37 108
3323215	Metal molding and trim and store fronts .....	72	5 755	181 937	3 890	8 526	103 435	367 411	650 709	1 015 980	24 600
3323217	Metal combination screen, storm sash, and storm doors .....	43	4 656	100 425	3 519	7 384	67 514	188 637	264 726	454 894	12 985
3323219	Metal window and door screens (except combination) and metal weather strip .....	46	2 891	75 820	2 069	4 271	44 553	194 660	210 922	411 029	7 281

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332321</b>	<b>Metal windows and doors</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>8 834 204</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3323211	Metal doors (except storm doors) .....	N	X	X	4 391 720	N	X	X	3 070 402
33232111	Residential aluminum doors (including garage and closet doors, excluding shower doors, tub enclosures, and storm doors) .....	N	X	X	550 882	N	X	X	N
3323211110	Swinging residential aluminum doors (excluding shower doors, tub enclosures, and storm doors) .....	21	X	X	148 191	33	X	X	101 130
3323211113	Sliding residential aluminum doors (glass, patio-type) (excluding shower doors, tub enclosures, and storm doors) .....	67	X	X	226 321	78	X	X	192 981
3323211116	All other residential aluminum doors (including garage and closet doors, excluding shower doors, tub enclosures, and storm doors) .....	15	X	X	55 376	22	X	X	64 803
3323211119	Overhead and sliding commercial and institutional aluminum doors (excluding shower doors, tub enclosures, and storm doors) .....	18	X	X	120 994	20	X	X	61 683
33232112	Commercial, institutional, and industrial aluminum doors (excluding shower doors, tub enclosures, and storm doors) .....	N	X	X	358 869	N	X	X	N
3323211201	Overhead industrial aluminum doors .....	10	X	X	63 361	15	X	X	32 291
3323211204	Sliding industrial aluminum doors .....	4	X	X	D	6	X	X	34 473
3323211207	All other industrial aluminum doors .....	13	X	X	D	13	X	X	23 965
3323211222	Swinging commercial and institutional aluminum doors (excluding shower doors, tub enclosures, and storm doors) .....	22	X	X	135 930	23	X	X	63 421
3323211225	All other commercial and institutional aluminum doors (excluding shower doors, tub enclosures, and storm doors) .....	21	X	X	42 169	29	X	X	52 318
33232113	Industrial iron and steel doors .....	N	X	X	596 106	N	X	X	N
3323211328	Overhead industrial iron and steel doors .....	41	X	X	341 238	41	X	X	223 876
3323211331	Swing industrial iron and steel doors .....	25	X	X	124 919	25	X	X	70 623
3323211334	All other industrial iron and steel doors (including sliding) .....	28	X	X	129 949	29	X	X	76 488
33232114	Residential iron and steel doors (except garage doors, excluding shower doors, tub enclosures, and storm doors) .....	N	X	X	801 574	N	X	X	N
3323211440	Residential steel composite doors (steel clad with foam wood components) (excluding shower doors, tub enclosures, and storm doors) .....	18	X	X	219 783	8	X	X	D
3323211443	Residential insulated steel entrance doors (except storm doors) .....	33	X	X	444 919	27	X	X	429 507
3323211446	All other residential iron and steel doors (including slide, swing, and closet doors, excluding shower doors, tub enclosures, and storm doors) .....	22	X	X	136 872	28	X	X	D
33232115	Commercial and institutional iron and steel doors (excluding shower doors, tub enclosures, and storm doors) .....	N	X	X	696 206	N	X	X	N
3323211549	Overhead and sliding commercial and institutional iron and steel doors (excluding shower doors, tub enclosures, and storm doors) .....	44	X	X	263 275	21	X	X	75 742
3323211552	Swing commercial and institutional iron and steel doors (excluding shower doors, tub enclosures, and storm doors) .....	49	X	X	333 899	58	X	X	268 805
3323211555	All other commercial and institutional iron and steel doors (excluding shower doors, tub enclosures, and storm doors) .....	32	X	X	99 032	30	X	X	61 137
33232116	Door frames (including trim sold as an integral part of the door frame, except storm door frames) .....	N	X	X	304 595	N	X	X	N
3323211661	Aluminum door frames (including trim sold as an integral part of the door frame, except storm door frames) .....	22	X	X	115 333	28	X	X	81 827
3323211664	Steel door frames, 16 gauge and heavier (including trim sold as an integral part of the door frame, except storm door frames) .....	41	X	X	105 501	58	X	X	151 828
3323211667	Steel door frames, lighter than 16 gauge (including trim sold as an integral part of the door frame, except storm door frames) .....	23	X	X	83 761	20	X	X	39 153

See footnotes at end of table.

**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332321</b>	<b>Metal windows and doors—Con.</b>								
3323211	Metal doors (except storm doors)—Con.								
33232117	Shower doors and tub enclosures (all metals) and other metal doors not made of aluminum or steel .....	N	X	X	288 982	N	X	X	N
3323211758	Metal doors other than steel or aluminum (excluding shower doors, tub enclosures, and storm doors) .....	6	X	X	18 981	6	X	X	7 930
3323211770	Shower doors and tub enclosures (all metal) .....	43	X	X	270 001	29	X	X	179 240
33232118	Residential iron and steel garage doors .....	N	X	X	761 544	N	X	X	N
3323211837	Residential iron and steel garage doors .....	39	X	X	761 544	53	X	X	603 600
3323211Y	Metal doors (except storm doors), nsk .....	N	X	X	32 962	N	X	X	N
3323211YWV	Metal doors (except storm doors), nsk .....	N	X	X	32 962	N	X	X	28 170
3323213	Metal windows (except storm sash) .....	N	X	X	1 984 592	N	X	X	1 547 891
33232131	All other residential aluminum window sash and frames, including jalousie, excluding storm sash .....	N	X	X	369 674	N	X	X	N
3323213101	Residential steel window sash and frames (except storm sash) .....	18	X	X	75 709	13	X	X	41 219
3323213111	Residential aluminum awning window sash and frames (except storm sash) .....	24	X	X	56 455	22	X	X	46 778
3323213116	Residential aluminum horizontal sliding window sash and frames (except storm sash) .....	61	X	X	138 913	88	X	X	236 059
3323213121	All other residential aluminum window sash and frames (including jalousie, excluding storm sash) .....	41	X	X	98 597	66	X	X	143 787
33232132	Other metal window sash and frames (except storm sash) .....	N	X	X	804 453	N	X	X	N
3323213226	Other steel window sash and frames (including commercial, industrial, etc.) (except storm sash) .....	27	X	X	81 811	26	X	X	48 367
3323213231	Other aluminum single and double hung sash and frames (including commercial, industrial, etc.) (except storm sash) .....	53	X	X	435 428	45	X	X	110 527
3323213236	Other aluminum awning window sash and frames (including commercial, industrial, etc.) (except storm sash) .....	14	X	X	30 066	12	X	X	34 701
3323213241	Other aluminum projected window sash and frames (including commercial, industrial, etc.) (except storm sash) .....	25	X	X	97 332	28	X	X	63 101
3323213246	Other aluminum window sash and frames (including commercial, industrial, etc.) (except storm sash) .....	41	X	X	106 229	52	X	X	157 323
3323213251	Metal window, other than steel or aluminum (except storm sash) .....	16	X	X	53 587	8	X	X	37 915
33232133	Residential aluminum single and double hung window sash and frames (except storm sash) .....	N	X	X	810 465	N	X	X	N
3323213306	Residential aluminum single and double hung window sash and frames (except storm sash) .....	108	X	X	810 465	142	X	X	620 156
3323213Y	Metal windows (except storm sash), nsk .....	N	X	X	—	N	X	X	N
3323213YWV	Metal windows (except storm sash), nsk .....	N	X	X	—	N	X	X	7 958
3323215	Metal molding and trim and store fronts .....	N	X	X	925 216	N	X	X	N
33232151	Metal molding and trim and store fronts .....	N	X	X	925 216	N	X	X	N
3323215101	Steel molding and trim .....	32	X	X	195 279	N	X	X	N
3323215106	Finished metal moldings for mirrors and pictures and aluminum molding and trim .....	73	X	X	556 482	N	X	X	N
3323215111	Metal store fronts, sold complete at factory .....	19	X	X	173 455	N	X	X	N
3323215Y	Metal molding and trim and store fronts, nsk .....	N	X	X	—	N	X	X	N
3323215YWV	Metal molding and trim and store fronts, nsk .....	N	X	X	—	N	X	X	N
3323217	Metal combination screen, storm sash, and storm doors .....	N	X	X	486 123	N	X	X	396 912
33232171	Metal combination screen, storm sash, and storm doors .....	N	X	X	486 123	N	X	X	N
3323217101	Metal storm sash (except combination) .....	13	X	X	16 949	18	X	X	16 284
3323217106	Metal combination screen and storm sash .....	54	X	X	133 342	69	X	X	117 673
3323217111	Metal storm doors .....	59	X	X	335 832	87	X	X	259 370
3323217Y	Metal combination screen, storm sash, and storm doors, nsk .....	N	X	X	—	N	X	X	N
3323217YWV	Metal combination screen, storm sash, and storm doors, nsk .....	N	X	X	—	N	X	X	3 585

See footnotes at end of table.

**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332321</b>	<b>Metal windows and doors—Con.</b>								
3323219	Metal window and door screens (except combination) and metal weather strip .....	N	X	X	316 168	N	X	X	255 597
33232191	Metal window and door screens (except combination) and metal weather strip .....	N	X	X	316 168	N	X	X	N
3323219101	Metal door screens .....	28	X	X	71 554	29	X	X	64 904
3323219106	Metal window screens, with metal frames (including tension and roll types) .....								
3323219111	Metal weather strip .....	52	X	X	168 365	60	X	X	125 840
3323219Y	Metal window and door screens (except combination) and metal weather strip, nsk .....	15	X	X	76 249	20	X	X	62 990
3323219YV	Metal window and door screens (except combination) and metal weather strip, nsk .....	N	X	X	—	N	X	X	N
3323219YW	Metal window and door screens (except combination) and metal weather strip, nsk .....	N	X	X	—	N	X	X	1 863
332321W	Metal windows and doors, nsk, total .....	N	X	X	730 385	N	X	X	N
332321WY	Metal windows and doors, nsk, total .....	N	X	X	730 385	N	X	X	N
332321WYWW	Metal window and doors, nsk, for nonadministrative-record establishments .....	N	X	X	482 991	N	X	X	N
332321WYWY	Metal windows and doors, nsk, for administrative-record establishments .....	N	X	X	247 394	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3323211</b>	<b>METAL DOORS (EXCEPT STORM DOORS)</b>		
	<b>United States .....</b>	<b>4 391 720</b>	<b>3 070 402</b>
	Alabama .....	77 326	51 536
	Arizona .....	89 651	50 050
	Arkansas .....	97 377	109 156
	California .....	414 698	264 696
	Colorado .....	18 641	6 559
	Florida .....	271 292	173 846
	Georgia .....	280 241	174 046
	Illinois .....	173 663	132 677
	Indiana .....	289 210	172 859
	Kansas .....	117 455	56 061
	Kentucky .....	10 854	4 613
	Maryland .....	13 579	N
	Massachusetts .....	17 004	14 792
	Michigan .....	145 574	130 779
	Minnesota .....	24 821	19 119
	Missouri .....	42 128	25 858
	Nebraska .....	48 144	N
	New Jersey .....	59 930	80 686
	New Mexico .....	6 130	N
	New York .....	91 619	79 394
	North Carolina .....	30 422	55 302
	Ohio .....	615 524	462 176
	Oklahoma .....	21 479	20 922
	Oregon .....	129 785	65 206
	Pennsylvania .....	236 637	151 498
	Tennessee .....	268 205	232 687
	Texas .....	258 384	149 571
	Utah .....	23 565	35 494
	Virginia .....	97 593	56 388
	Washington .....	51 859	20 449
	Wisconsin .....	128 041	55 539

See footnotes at end of table.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes.]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3323213	<b>METAL WINDOWS (EXCEPT STORM SASH)</b>		
	<b>United States</b> .....	<b>1 984 592</b>	<b>1 547 891</b>
	Alabama .....	12 491	10 131
	Arizona .....	117 944	50 426
	California .....	194 745	188 815
	Florida .....	127 519	92 679
	Georgia .....	63 498	36 253
	Illinois .....	71 464	22 807
	Indiana .....	67 589	75 889
	Kansas .....	33 040	N
	Kentucky .....	9 757	10 976
	Louisiana .....	13 051	9 137
	Massachusetts .....	14 182	10 893
	Michigan .....	42 514	75 181
	Minnesota .....	24 385	9 665
	Missouri .....	189 341	125 399
	Nebraska .....	7 937	N
	New Jersey .....	26 617	30 403
	New York .....	68 090	61 094
	North Carolina .....	17 142	30 670
	Ohio .....	31 336	40 535
	Oregon .....	53 240	55 897
	Pennsylvania .....	162 302	102 187
Tennessee .....	128 600	91 980	
Texas .....	231 575	151 093	
Utah .....	6 702	N	
Wisconsin .....	77 903	65 527	
3323215	<b>METAL MOLDING AND TRIM AND STORE FRONTS</b>		
	<b>United States</b> .....	<b>925 216</b>	<b>N</b>
	California .....	114 130	N
	Florida .....	58 285	N
	Georgia .....	72 287	N
	Illinois .....	35 275	N
	Indiana .....	38 622	N
	Missouri .....	17 181	N
	New Jersey .....	9 159	N
	New York .....	5 984	N
	Ohio .....	73 351	N
	Pennsylvania .....	104 657	N
	Tennessee .....	18 115	N
	Texas .....	148 390	N
	Wisconsin .....	19 474	N
	3323217	<b>METAL COMBINATION SCREEN, STORM SASH, AND STORM DOORS</b>	
<b>United States</b> .....		<b>486 123</b>	<b>396 912</b>
Florida .....		22 965	3 240
Illinois .....		5 874	12 942
Indiana .....		5 538	N
Kansas .....		4 697	3 576
Massachusetts .....		2 381	N
North Carolina .....		38 089	53 751
Ohio .....		9 984	10 037
Pennsylvania .....		3 455	N
Tennessee .....		24 661	19 999
Texas .....		20 383	14 225
Washington .....		7 694	N
3323219	<b>METAL WINDOW AND DOOR SCREENS (EXCEPT COMBINATION) AND METAL WEATHER STRIP</b>		
	<b>United States</b> .....	<b>316 168</b>	<b>255 597</b>
	California .....	33 729	44 940
	Florida .....	14 822	9 275
	Georgia .....	15 329	6 532
	New Jersey .....	2 965	2 683
	Ohio .....	9 875	9 020
	Tennessee .....	31 666	N
	Texas .....	22 683	14 566
	Wisconsin .....	68 748	51 337

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332321</b>	<b>METAL WINDOW &amp; DOOR MFG</b>				
32721101	Flat glass (plate, float, and sheet) . . . . .	X	146 091	X	291 115
33251009	Builders' hardware (including door locks, locksets, lock trim, screen hardware, etc.) . . . . .	X	236 279	X	207 527
33272203	Metal bolts, nuts, screws, washers, rivets, and other screw machine products . . . . .	X	103 072	X	N
33200045	Other fabricated metal products (except castings and forgings) . . . . .	X	294 389	X	117 932
33151001	Iron and steel castings (rough and semifinished) . . . . .	X	16 713	X	9 635
33152011	Nonferrous (aluminum, copper, etc.) castings (rough and semifinished) . . . . .	X	31 611	X	N
33210001	Forgings . . . . .	X	119	X	N
33120007	Steel bars, bar shapes, and plates (except castings, forgings, and fabricated metal products) . . . . .	X	82 962	X	N
33120017	Steel sheet and strip, including tin plate . . . . .	X	744 101	X	N
33120069	Steel structural shapes (except castings, forgings, and fabricated metal products) . . . . .	X	59 621	X	N
33120025	Steel wire and wire products . . . . .	X	32 501	X	13 700
33120087	All other steel shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	291 688	X	112 627
33142111	Copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	2 516	X	N
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing . . . . .	X	261 053	X	N
33131600	Aluminum and aluminum-base alloy extruded shapes, including extruded rod, bar, pipe, tube, etc. . . . .	X	668 957	X	N
33100007	All other aluminum and aluminum-base alloy shapes and forms, including refinery shapes (except castings and forgings) . . . . .	X	340 389	X	N
33100083	Other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	272 683	X	N
00190020	Aluminum and aluminum-base alloy scrap (excluding home scrap) . . . . .	X	81 884	X	88 185
32610013	Plastics products consumed in the form of sheets, rods, tubes, film, and other shapes . . . . .	X	60 354	X	109 325
00970099	All other materials and components, parts, containers, and supplies . . . . .	X	621 326	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. . . . .	X	503 998	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive



stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332321 METAL WINDOW AND DOOR MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing metal framed windows (i.e., typically using purchased glass) and metal doors. Examples of products made by these establishments are metal door frames; metal framed window and door screens; metal molding and trim (except automotive); and metal curtain walls.

The data published with NAICS code 332321 include the following SIC industries:

- 2499 Wood products, n.e.c. (pt)
- 3442 Metal doors, sash, and trim
- 3449 Miscellaneous metal work (pt)

This definition comes from the 1997 NAICS Manual. However, for this industry, the 1997 Economic Census – Manufacturing did not fully implement the conversion to NAICS. Data for NAICS industry 332321 include establishments primarily engaged in the manufacture of metal finished moldings for mirrors and pictures. The NAICS definitions will be fully implemented with the 2002 Economic Census.

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.



The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.

# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33211111	34625	34625	3321165281	3469989	3469989	3322127 pt.	37999 pt.	37999 pt.
3321111101	3462511	3462511	3321165291	3469997	3469997	3322127101	3423611	3423611
332111206	3462513	3462513	3321165361	3469971	3469971	3322127111	3423621	3423621
332111311	3462515	3462515	3321165YVW	3469900	3469900	3322127116	3423631	3423631
332111416	3462517	3462517	3321166W	34690 pt.	34690 pt.	3322127121	3423641	3423641
332111YVW	3462500	3462500	3321166WYVW	3469000 pt.	3469000 pt.	3322127131	3423681	3423681
3321113	34626	34626	3321166YVW	3469002 pt.	3469002 pt.	3322127136	3423685	3423685
3321113101	3462611	3462611	3321170 pt.	34990 pt.	34990 pt.	3322127141	3799906	3799923 pt.
3321113106	3462613	3462613	3321170 pt.	34990 pt.	34990 pt.	3322127199	3423698	3423698
3321113111	3462616	3462616	3321170 pt.	34990 pt.	34990 pt.	3322127226	3524101	3524100 pt.
3321113YVW	3462600	3462600	3321170 pt.	34996	34996	3322127YVW pt.	3423600	3423600
3321115	34627	34627	3321170106	3499633	3499633	3322127YVW pt.	3524100 pt.	3524100 pt.
3321115101	3462712	3462712	3321170211	3499655	3499655	3322127YVW pt.	3799900 pt.	3799900 pt.
3321115106	3462716	3462716	3321170321	3499677	3499677	3322129 pt.	35455	35455
3321115YVW	3462700	3462700	3321170401	3499611	3499611	3322129 pt.	35455	35455
3321117	34628	34628	3321170416	3499666	3499666	3322129 pt.	36992 pt.	36992 pt.
3321117101	3462812	3462812	3321170426	3499688	3499688	3322129101	3545511	3545511
3321117106	3462816	3462816	3321170YVW pt.	3499000 pt.	3499000 pt.	3322129106	3545513	3545513
3321117YVW	3462800	3462800	3321170YVW pt.	3499600	3499600	3322129111	3545515	3545515
332111W	34620	34620	3321170YVW pt.	3499002 pt.	3499002 pt.	3322129116	3545517	3545517
332111WYVW	3462000	3462000	3322111 pt.	39141 pt.	39141 pt.	3322129121	3545521	3545521
332111YVW	3462002	3462002	3322111 pt.	39142 pt.	39142 pt.	3322129126	3545561	3545561
3321121	34635	34635	332211101	3421111	3421111	3322129131	3545565	3545565
3321121101	3463521	3463521	3322111103	3914245	3914245	3322129146	3545577	3545577
3321121206	3463523	3463523	3322111106	3914155	3914170 pt.	3322129161	3699255	3699200 pt.
3321121311	3463525	3463525	332211211	3421125	3421125	3322129236	3545571	3545571
3321121316	3463529	3463529	332211222	3421130	3421130	3322129341	3545573	3545573
3321121YVW	3463500	3463500	332211326	3421153	3421153	3322129451	3545579	3545579
3321122	34639	34639	332211331	3421155	3421155	3322129YVW pt.	3545500	3545500
3321122101	3463915	3463915	332211336	3421157	3421157	3322129YVW pt.	3699200 pt.	3699200 pt.
3321122106	3463925	3463925	332211344	3421159	3421159	3322129YVW pt.	34230	34230
3321122111	3463935	3463935	332211355	3421180	3421180	332212W pt.	35230 pt.	35230 pt.
3321122YVW	3463900	3463900	332211361	3421180	3421180	332212W pt.	35240 pt.	35240 pt.
332112W	34630	34630	332211372	3421100	3421100	332212W pt.	35450 pt.	35450 pt.
332112WYVW	3463000	3463000	332211382	3421200	3421200	332212W pt.	36990 pt.	36990 pt.
332112YVW	3463002	3463002	332211391	3421200	3421200	332212W pt.	37990 pt.	37990 pt.
3321140 pt.	34490 pt.	34490 pt.	3322113101	3421205	3421205	332212W pt.	39990 pt.	39990 pt.
3321140 pt.	34498	34498	3322113106	3421210	3421210	332212WYVW pt.	3423000	3423000
3321140101	3449811	3449811	3322113111	3421216	3421216	332212WYVW pt.	3523000 pt.	3523000 pt.
3321140206	3449813	3449813	3322113YVW	3421200	3421200	332212WYVW pt.	3524000 pt.	3524000 pt.
3321140311	3449815	3449815	332211W pt.	34210	34210	332212WYVW pt.	3545000 pt.	3545000 pt.
3321140416	3449817	3449817	332211W pt.	39140 pt.	39140 pt.	332212WYVW pt.	3699000 pt.	3699000 pt.
3321140YVW pt.	3449000 pt.	3449000 pt.	332211W pt.	3421000	3421000	332212WYVW pt.	3799000 pt.	3799000 pt.
3321140YVW pt.	3449800	3449800	332211WYVW pt.	3914000 pt.	3914000 pt.	332212WYVW pt.	3999000 pt.	3999000 pt.
3321140YVW pt.	3449002 pt.	3449002 pt.	332211WYVW pt.	3421002	3421002	332212WYVW pt.	3423002	3423002
3321150 pt.	34660	34660	332211WYVW pt.	3914002 pt.	3914002 pt.	332212WYVW pt.	3523002 pt.	3523002 pt.
3321150 pt.	34661	34661	3322121 pt.	34231	34231	332212WYVW pt.	3524002 pt.	3524002 pt.
3321150 pt.	34662	34662	3322121 pt.	39999 pt.	39999 pt.	332212WYVW pt.	3545002 pt.	3545002 pt.
3321150101	3466105	3466105	3322121101	3423112	3423112	332212WYVW pt.	3699002 pt.	3699002 pt.
3321150103 pt.	3466200 pt.	3466200	3322121206	3423113	3423113	332212WYVW pt.	3799002 pt.	3799002 pt.
3321150103 pt.	3466200 pt.	3466230	3322121311	3423121	3423121	332212WYVW pt.	3999002 pt.	3999002 pt.
3321150103 pt.	3466200 pt.	3466230	3322121351	3423141	3423141	3322130	34250	34250
3321150106 pt.	3466123 pt.	3466120	3322121356	3423151	3423151	3322130101	3425011	3425011
3321150106 pt.	3466123 pt.	3466122	3322121361	3423155	3423155	3322130106	3425013	3425013
3321150YVW pt.	3466000	3466000	3322121365	3999971	3999971	3322130111	3425016	3425016
3321150YVW pt.	3466100	3466100	3322121399	3423197	3423197	3322130116	3425018	3425018
3321150YVW pt.	3466002	3466002	3322121416	3423131	3423131	3322130122	3425019	3425019
3321161	34692	34692	3322121421	3423133	3423133	3322130226	3425031	3425031
3321161101	3469201	3469201	3322121426	3423136	3423136	3322130231	3425035	3425035
3321161115	3469215	3469215	3322121431	3423137	3423137	3322130244	3425039	3425039
3321161205	3469205	3469205	3322121436	3423138	3423138	3322130255	3425041	3425041
3321161311	3469211	3469211	3322121444	3423139	3423139	3322130361	3425043	3425043
3321161331	3469231	3469231	3322121YVW pt.	3423100	3423100	3322130365	3425045	3425045
3321161352	3469252	3469252	3322121YVW pt.	3999900 pt.	3999900 pt.	3322130377	3425049	3425049
3321161354	3469253	3469253	3322123 pt.	34234	34234	3322130YVW	3425000	3425000
3321161388	3469288	3469288	3322123 pt.	3523E pt.	3523E pt.	3322130YVW	3425002	3425002
3321161398	3469298	3469298	3322123101	3423414	3423414	3322141	34694	34694
3321161421	3469220	3469220	3322123106	3423433	3423433	3322141111	3469411	3469411
3321161441	3469241	3469241	3322123111	3423444	3423444	3322141221	3469414	3469414
3321161525	3469225	3469225	3322123121	3423498	3423498	3322141231	3469417	3469417
3321161561	3469261	3469261	3322123216	3523E80	3523E00 pt.	3322141241	3469429	3469429
3321161571	3469271	3469271	3322123YVW pt.	3423400	3423400	3322141YVW	3469400	3469400
3321161584	3469284	3469284	3322123YVW pt.	3523E00 pt.	3523E00 pt.	3322143	34695	34695
3321161YVW	3469200	3469200	3322125	34235	34235	3322143101	3469507	3469507
3321163	34696	34696	3322125101	3423511	3423511	3322143211	3469509	3469509
3321163100	3469600	3469600	3322125206	3423512	3423512	3322143221	3469515	3469515
3321165	34699	34699	3322125311	3423521	3423521	3322143231 pt.	3469525 pt.	3469521
3321165101	3469941	3469941	3322125316	3423522	3423522	3322143231 pt.	3469525 pt.	3469524
3321165211	3469948	3469948	3322125321	3423531	3423531	3322143241 pt.	3469599 pt.	3469527
3321165221	3469951	3469951	3322125333	3423541	3423541	3322143241 pt.	3469599 pt.	3469527
3321165231	3469959	3469959	3322125YVW	3423500	3423500	3322143YVW	3469500	3469500
3321165241	3469961	3469961	3322127 pt.	34236	34236	332214W	34690 pt.	34690 pt.
3321165251	3469969	3469969	3322127 pt.	35241 pt.	35241 pt.	332214WYVW	3469000 pt.	3469000 pt.
3321165271	3469985	3469985				332214WYVW	3469002 pt.	3469002 pt.



1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3323111	34481	34481	332312321	3442298	3442298	3323233YVW pt	3446200	3446200
332311106	3448117	3448117	3323213306	3442221	3442221	3323233YVW pt	3449600	3449600
332311111	3448118	3448118	3323213YVW	3442200	3442200	3323235	34463	34463
332311201	3448115	3448115	3323215 pt	24991 pt	24991 pt	3323235101	3446310	3446310
332311YVW	3448100	3448100	3323215 pt	34423	34423	3323235106	3446312	3446312
3323113	34482	34482	3323215 pt	34497	34497	3323235211	3446320	3446320
332311301	3448211	3448211	332321501 pt	3442321	3442321	3323235216	3446322	3446322
332311306	3448214	3448214	332321501 pt	3449773	3449773	3323235YVW	3446300	3446300
332311311	3448215	3448215	332321506 pt	2499141	2499141	3323237	34464	34464
332311321	3448216	3448216	332321506 pt	3442325	3442325	3323237101	3446410	3446410
332311322	3448217	3448217	332321506 pt	3449775	3449775	3323237106	3446413	3446413
332311326	3448218	3448218	332321511 pt	3442351	3442351	3323237111	3446416	3446416
332311331	3448226	3448226	332321511 pt	3449779	3449779	3323237116	3446418	3446418
332311326	3448227	3448227	3323215YVW pt	2499100 pt	2499100 pt	3323237YVW	3446400	3446400
332311324	3448254	3448254	3323215YVW pt	3442300	3442300	3323239 pt	34465	34465
3323113YVW	3448200	3448200	3323215YVW pt	3449700	3449700	3323239 pt	3523E pt	3523E pt
332311W	34480	34480	3323217	34424	34424	3323239106	3446512	3446512
332311WYVW	3448000	3448000	3323217101	3442411	3442411	3323239111	3446530	3446530
332311WYVW	3448002	3448002	3323217106	3442412	3442412	3323239201	3446510	3446510
3323121 pt	34411	34411	3323217111	3442413	3442413	3323239311	3523E84	3523E00 pt
3323121 pt	34494	34494	3323217YVW	3442400	3442400	3323239YVW pt	3446500	3446500
3323121101 pt	3441141	3441141	3323219	34425	34425	3323239YVW pt	3523E00 pt	3523E00 pt
3323121101 pt	3449443	3449443	3323219101	3442511	3442511	332323W pt	34460	34460
3323121206 pt	3441142	3441142	3323219106	3442512	3442512	332323W pt	34490 pt	34490 pt
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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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332999A111	3499531	3499531						
332999A116	3499539	3499539						



# Sheet Metal Work Manufacturing

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



# U S C E N S U S B U R E A U

*Helping You Make Informed Decisions*

U.S. Department of Commerce  
Economics and Statistics Administration  
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*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director





**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.



**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Compan-ies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufac-ture (\$1,000)	Cost of materials (\$1,000)	Value of ship-ments (\$1,000)	Total capital ex-pen-di-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332322</b>	<b>Sheet metal work mfg</b> .....	<b>4 201</b>	<b>4 465</b>	<b>128 534</b>	<b>4 032 075</b>	<b>95 419</b>	<b>191 739</b>	<b>2 502 487</b>	<b>8 714 145</b>	<b>7 153 230</b>	<b>15 782 380</b>	<b>543 117</b>
344410	Sheet metal work (pt) .....	N	4 465	128 534	4 032 075	95 419	191 739	2 502 487	8 714 145	7 153 230	15 782 380	543 117

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufac-ture (\$1,000)	Cost of materials (\$1,000)	Value of ship-ments (\$1,000)	Total capital ex-pen-di-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332322, SHEET METAL WORK MFG</b>												
United States .....	1	4 465	1 745	128 534	4 032 075	95 419	191 739	2 502 487	8 714 145	7 153 230	15 782 380	543 117
Alabama .....	1	79	30	1 940	52 847	1 479	2 742	32 728	128 346	135 480	260 430	13 208
Arizona .....	1	76	21	2 050	61 623	1 599	3 552	36 733	122 729	115 644	240 778	6 711
Arkansas .....	1	33	11	704	22 651	539	1 044	12 584	62 155	48 131	110 990	2 131
California .....	1	652	275	21 126	649 417	15 462	31 027	396 330	1 334 616	1 043 014	2 355 916	80 814
Colorado .....	-	70	31	2 227	66 443	1 656	3 397	41 106	144 758	116 584	258 656	12 440
Connecticut .....	3	84	24	1 284	49 747	905	1 843	28 624	88 681	67 347	154 553	6 532
Delaware .....	-	10	4	682	24 215	466	1 304	17 742	46 783	27 726	75 261	2 147
Florida .....	1	211	72	5 048	134 601	3 638	7 117	81 984	300 428	249 027	550 040	14 526
Georgia .....	1	105	41	2 589	77 488	1 965	3 940	47 884	193 210	235 129	427 307	10 161
Idaho .....	-	24	13	814	26 461	579	1 124	15 032	62 745	32 210	94 596	6 279
Illinois .....	-	194	91	5 705	192 378	4 180	8 592	116 174	504 264	317 558	818 131	28 223
Indiana .....	1	127	66	4 473	137 066	3 357	6 877	87 197	281 362	243 864	522 914	17 416
Iowa .....	-	27	9	814	25 169	629	1 232	15 636	58 274	57 719	115 860	4 613
Kansas .....	-	29	13	1 293	38 648	1 050	2 276	26 256	89 370	78 903	167 895	3 873
Kentucky .....	1	58	23	1 414	43 788	1 062	2 143	27 799	122 209	93 696	211 414	6 006
Louisiana .....	2	31	10	863	23 497	566	1 096	13 565	46 199	45 230	91 181	2 158
Maryland .....	1	51	16	1 346	46 401	949	1 928	27 218	71 630	68 278	139 700	4 355
Massachusetts .....	1	161	66	4 056	149 512	3 032	5 632	91 452	265 046	166 495	430 788	20 650
Michigan .....	1	170	46	3 680	130 703	2 759	5 702	81 658	277 668	202 121	475 560	16 337
Minnesota .....	-	105	50	3 796	125 346	2 794	5 687	80 705	286 462	186 042	471 538	22 389
Mississippi .....	-	23	12	1 015	22 702	792	1 306	14 716	62 790	61 644	123 251	3 506
Missouri .....	1	86	36	2 313	70 554	1 677	3 280	43 325	142 911	115 941	259 493	8 452
Nebraska .....	1	15	6	356	10 158	268	503	5 843	22 595	39 309	60 062	2 351
Nevada .....	2	34	14	878	25 149	668	1 260	15 375	48 689	39 924	87 866	2 742
New Hampshire .....	-	42	18	1 315	44 907	1 020	2 081	28 708	89 722	50 708	139 617	4 720
New Jersey .....	-	165	56	4 481	158 500	3 278	7 074	98 459	346 605	328 886	655 375	18 597
New Mexico .....	1	18	3	293	8 559	249	542	5 434	17 200	13 017	30 412	464
New York .....	1	235	90	6 433	220 059	4 882	9 569	142 116	404 611	309 368	710 198	22 580
North Carolina .....	-	109	39	2 999	86 930	2 297	4 660	55 034	194 399	145 840	337 600	14 323
Ohio .....	-	213	86	6 590	203 479	4 924	9 574	131 964	435 228	445 397	895 650	25 601
Oklahoma .....	2	61	20	1 099	29 599	841	1 605	18 410	60 448	51 691	111 796	3 904
Oregon .....	1	84	34	2 198	67 006	1 629	3 055	42 657	145 564	119 954	262 933	7 839
Pennsylvania .....	-	209	82	6 985	223 828	5 407	10 854	140 209	462 424	413 768	866 857	25 955
Rhode Island .....	-	11	1	303	11 266	197	403	6 018	23 816	26 904	49 645	516
South Carolina .....	2	41	16	880	23 281	687	1 391	15 436	50 164	37 404	87 236	2 406
Tennessee .....	-	59	30	1 873	52 091	1 438	2 662	31 763	115 547	150 889	267 782	7 238
Texas .....	1	377	131	9 612	283 559	6 963	14 451	168 947	690 255	544 331	1 223 371	41 377
Utah .....	-	43	15	1 526	53 210	1 146	2 357	35 002	117 122	86 490	204 487	6 319
Vermont .....	1	11	6	537	14 633	426	898	9 937	33 796	23 214	56 960	1 608
Virginia .....	-	68	32	1 607	45 989	1 203	2 105	28 083	90 608	79 164	168 268	10 931
Washington .....	-	114	44	2 956	89 617	2 255	4 243	58 180	193 817	180 748	372 512	11 162
West Virginia .....	2	13	6	385	10 005	264	538	6 968	23 153	8 013	30 475	928
Wisconsin .....	-	89	46	4 927	170 988	3 547	7 369	107 200	362 816	249 415	613 240	36 196

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332322, SHEET METAL WORK MFG</b>		<b>332322, SHEET METAL WORK MFG—Con.</b>	
Companies <sup>1</sup> . . . . . number..	4 201	Value added . . . . . \$1,000..	8 714 145
All establishments . . . . . number..	4 465	Total inventories, beginning of year . . . . . \$1,000..	1 727 239
Establishments with 1 to 19 employees . . . . . number..	2 720	Finished goods inventories, beginning of year . . . . . \$1,000..	456 845
Establishments with 20 to 99 employees . . . . . number..	1 496	Work-in-process inventories, beginning of year . . . . . \$1,000..	456 099
Establishments with 100 employees or more . . . . . number..	249	Materials and supplies inventories, beginning of year . . . . . \$1,000..	814 295
All employees . . . . . number..	128 534	Total inventories, end of year . . . . . \$1,000..	1 815 142
Total compensation <sup>2</sup> . . . . . \$1,000..	4 933 019	Finished goods inventories, end of year . . . . . \$1,000..	478 489
Annual payroll . . . . . \$1,000..	4 032 075	Work-in-process inventories, end of year . . . . . \$1,000..	519 450
Total fringe benefits . . . . . \$1,000..	900 944	Materials and supplies inventories, end of year . . . . . \$1,000..	817 203
Production workers, average for year . . . . . number..	95 419	Gross book value of total assets at beginning of year . . . . . \$1,000..	4 177 686
Production workers on March 15 . . . . . number..	93 578	Total capital expenditures (new and used) . . . . . \$1,000..	543 117
Production workers on May 15 . . . . . number..	94 627	Capital expenditures for buildings and other structures (new and used) . . . . . \$1,000..	93 713
Production workers on August 15 . . . . . number..	96 317	Capital expenditures for machinery and equipment (new and used) . . . . . \$1,000..	449 404
Production workers on November 15 . . . . . number..	97 154	Total retirements <sup>2</sup> . . . . . \$1,000..	84 653
Production-worker hours . . . . . 1,000..	191 739	Gross book value of total assets at end of year . . . . . \$1,000..	4 636 150
Production-worker wages . . . . . \$1,000..	2 502 487	Total depreciation during year <sup>2</sup> . . . . . \$1,000..	326 049
Total cost of materials . . . . . \$1,000..	7 153 230	Total rental payments <sup>2</sup> . . . . . \$1,000..	331 951
Cost of materials, parts, containers, etc., consumed . . . . . \$1,000..	6 012 229	Buildings and other structures rental payments <sup>2</sup> . . . . . \$1,000..	169 715
Cost of resales . . . . . \$1,000..	425 299	Machinery and equipment rental payments <sup>2</sup> . . . . . \$1,000..	162 236
Cost of fuels . . . . . \$1,000..	54 923	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> . . . . . \$1,000..	22 168
Cost of purchased electricity . . . . . \$1,000..	110 984	Response coverage ratio <sup>4</sup> . . . . . percent..	76
Cost of contract work . . . . . \$1,000..	549 795	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> . . . . . \$1,000..	71 421
Quantity of electricity purchased for heat and power . . . . . 1,000 kWh..	1 718 346	Response coverage ratio <sup>4</sup> . . . . . percent..	76
Quantity of electricity generated less sold for heat and power . . . . . 1,000 kWh..	-	Cost of purchased communications services <sup>3</sup> . . . . . \$1,000..	33 301
Total value of shipments . . . . . \$1,000..	15 782 380	Response coverage ratio <sup>4</sup> . . . . . percent..	76
Primary products value of shipments . . . . . \$1,000..	14 241 134	Cost of purchased legal services <sup>3</sup> . . . . . \$1,000..	22 394
Secondary products value of shipments . . . . . \$1,000..	760 282	Response coverage ratio <sup>4</sup> . . . . . percent..	76
Total miscellaneous receipts . . . . . \$1,000..	780 964	Cost of purchased accounting and bookkeeping services <sup>3</sup> . . . . . \$1,000..	21 203
Value of resales . . . . . \$1,000..	568 300	Response coverage ratio <sup>4</sup> . . . . . percent..	76
Contract receipts . . . . . \$1,000..	109 615	Cost of purchased advertising services <sup>3</sup> . . . . . \$1,000..	34 917
Other miscellaneous receipts . . . . . \$1,000..	103 049	Response coverage ratio <sup>4</sup> . . . . . percent..	76
Primary products specialization ratio . . . . . percent..	94	Cost of purchased software and other data processing services <sup>3</sup> . . . . . \$1,000..	14 480
Value of primary products shipments made in all industries . . . . . \$1,000..	15 249 202	Response coverage ratio <sup>4</sup> . . . . . percent..	76
Value of primary products shipments made in this industry . . . . . \$1,000..	14 241 134	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> . . . . . \$1,000..	9 817
Value of primary products shipments made in other industries . . . . . \$1,000..	1 008 068	Response coverage ratio <sup>4</sup> . . . . . percent..	76
Coverage ratio . . . . . percent..	93		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332322, SHEET METAL WORK MFG</b>												
<b>All establishments . . . . .</b>	<b>1</b>	<b>4 465</b>	<b>1 745</b>	<b>128 534</b>	<b>4 032 075</b>	<b>95 419</b>	<b>191 739</b>	<b>2 502 487</b>	<b>8 714 145</b>	<b>7 153 230</b>	<b>15 782 380</b>	<b>543 117</b>
Establishments with 1 to 4 employees . . . . .	8	938	—	1 980	55 420	1 534	2 585	35 158	117 800	104 105	221 650	7 121
Establishments with 5 to 9 employees . . . . .	4	751	—	5 101	154 253	3 690	6 642	97 020	308 869	239 353	546 359	17 824
Establishments with 10 to 19 employees . . . . .	2	1 031	—	14 433	466 870	10 381	19 801	283 390	987 972	795 534	1 779 447	56 372
Establishments with 20 to 49 employees . . . . .	1	1 076	1 076	33 286	1 066 042	24 382	47 837	642 125	2 341 721	1 862 420	4 173 620	152 221
Establishments with 50 to 99 employees . . . . .	—	420	420	28 674	918 810	21 438	43 911	564 852	1 866 730	1 479 588	3 321 674	136 877
Establishments with 100 to 249 employees . . . . .	—	211	211	31 073	954 738	23 457	48 161	605 109	2 194 056	1 790 268	3 959 638	114 120
Establishments with 250 to 499 employees . . . . .	—	33	33	10 625	309 139	8 025	17 975	202 859	676 980	692 411	1 378 195	36 316
Establishments with 500 to 999 employees . . . . .	—	5	5	3 362	106 803	2 512	4 827	71 974	220 017	189 551	401 797	22 266
Establishments with 1,000 to 2,499 employees . . . . .	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more . . . . .	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records <sup>2</sup> . . . . .	9	1 082	—	4 637	114 794	3 446	5 445	72 451	227 300	192 389	419 053	14 243

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-unit companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332322</b>	<b>Sheet metal work mfg . . . .</b>	<b>4 465</b>	<b>128 534</b>	<b>4 032 075</b>	<b>95 419</b>	<b>191 739</b>	<b>2 502 487</b>	<b>8 714 145</b>	<b>7 153 230</b>	<b>15 782 380</b>	<b>543 117</b>
3323221	Air-conditioning ducts and stove pipe.	316	14 277	434 213	10 871	20 915	278 651	958 221	690 289	1 637 761	45 984
3323223	Sheet metal culverts, flumes, irrigation pipes, etc. . . . .	85	1 769	57 689	1 193	2 494	29 715	159 012	302 807	458 065	6 545
3323227	Sheet metal roofing and roof drainage equipment . . . . .	164	5 850	179 311	3 588	7 163	89 704	573 922	826 248	1 387 171	41 615
3323229	Sheet metal flooring and siding . . . . .	79	3 845	126 151	2 543	5 282	71 153	378 025	824 230	1 200 551	18 719
332322A	Sheet metal awnings, canopies, cornices, and soffits . . . . .	109	4 056	122 119	2 389	4 717	59 616	412 599	264 188	676 111	9 718
332322C	Sheet metal electronic enclosures . . . . .	549	33 059	1 032 431	25 787	53 840	668 967	2 069 054	1 404 728	3 452 736	149 697
332322E	Other sheet metal work . . . . .	1 159	42 414	1 390 618	31 774	65 422	872 393	2 854 900	1 875 670	4 705 999	181 287

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332322</b>	<b>Sheet metal work .....</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>15 249 202</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3323221	Sheet metal air-conditioning ducts and stove pipe .....	N	X	X	1 421 645	N	X	X	1 030 509
33232211	Sheet metal air-conditioning ducts, (including dust collection ducts) .....	N	X	X	1 071 542	N	X	X	N
3323221101	Sheet metal work (including dust collection ducts) .....	314	X	X	974 359	316	X	X	607 059
3323221106	Aluminum sheet metal work (including dust collection ducts) .....	57	X	X	97 183	56	X	X	62 112
33232212	Sheet metal stove pipe, furnace smoke pipe, and elbows .....	N	X	X	323 940	N	X	X	N
3323221211	Steel sheet metal stove pipe, furnace smoke pipe, and elbows .....	85	X	X	264 743	84	X	X	274 756
3323221216	Aluminum sheet metal stove pipe, furnace smoke pipe, and elbows .....	17	X	X	59 197	18	X	X	56 415
3323221Y	Sheet metal air-conditioning ducts and stove pipe, nsk .....	N	X	X	26 163	N	X	X	N
3323221YVV	Sheet metal air-conditioning ducts and stove pipe, nsk .....	N	X	X	26 163	N	X	X	30 167
3323223	Sheet metal culverts, flumes, irrigation pipes, etc. ....	N	X	X	438 724	N	X	X	331 271
33232231	Sheet metal culverts, flumes, irrigation pipes, etc. ....	N	X	X	438 724	N	X	X	N
3323223101	Steel sheet metal work, etc. ....	45	X	X	375 530	48	X	X	270 471
3323223106	Aluminum sheet metal work, etc. ....	14	X	X	49 086	17	X	X	44 949
3323223111	Other sheet metal work, etc. ....	7	X	X	14 108	8	X	X	6 980
3323223Y	Sheet metal culverts, flumes, irrigation pipes, etc., nsk .....	N	X	X	-	N	X	X	N
3323223YVV	Sheet metal culverts, flumes, irrigation pipes, etc., nsk .....	N	X	X	-	N	X	X	8 871
3323227	Sheet metal roofing and roof drainage equipment .....	N	X	X	1 504 195	N	X	X	1 150 171
33232271	Sheet metal roofing, all types .....	N	X	X	1 037 281	N	X	X	N
3323227101	Sheet metal roofing, all types .....	149	X	X	1 037 281	113	X	X	671 512
33232272	Sheet metal roof drainage equipment (including eave troughs, etc) .....	N	X	X	456 036	N	X	X	N
3323227206	Aluminum and other sheet metal roofing, all types .....	46	X	X	143 737	37	X	X	110 149
3323227211	Steel sheet metal roof drainage equipment (including eave troughs, etc.) .....	55	X	X	116 637	50	X	X	115 203
3323227216	Aluminum sheet metal roof drainage equipment (including eave troughs, etc.) .....	42	X	X	170 983	43	X	X	184 318
3323227221	All other sheet metal roof drainage equipment (including eave troughs, etc.) .....	16	X	X	24 679	15	X	X	29 238
3323227Y	Sheet metal roofing and roof drainage equipment, nsk .....	N	X	X	10 878	N	X	X	N
3323227YVV	Sheet metal roofing and roof drainage equipment, nsk .....	N	X	X	10 878	N	X	X	39 751
3323229	Sheet metal flooring and siding .....	N	X	X	1 029 483	N	X	X	834 126
33232291	Steel sheet metal siding .....	N	X	X	861 913	N	X	X	N
3323229106	Steel sheet metal siding .....	56	X	X	482 272	45	X	X	286 304
3323229111	Residential aluminum sheet metal work manufacturing (including mobile homes) .....	19	X	X	271 151	19	X	X	264 921
3323229116	Other aluminum sheet metal work manufacturing (commercial, industrial, farm buildings, etc.) .....	14	X	X	87 521	20	X	X	67 240
3323229121	Other sheet metal work manufacturing .....	13	X	X	20 969	4	X	X	4 090
33232292	Fabricated sheet metal flooring .....	N	X	X	167 570	N	X	X	N
3323229201	Fabricated sheet metal flooring .....	29	X	X	167 570	30	X	X	180 073
3323229Y	Sheet metal flooring and siding, nsk .....	N	X	X	-	N	X	X	N
3323229YVV	Sheet metal flooring and siding, nsk .....	N	X	X	-	N	X	X	31 498
332322A	Sheet metal awnings, canopies, cornices, and soffits .....	N	X	X	726 093	N	X	X	488 745
332322A1	Sheet metal awnings, canopies, carports, soffit, shutters, steel and aluminum .....	N	X	X	710 414	N	X	X	N
332322A101	Steel sheet metal awnings, canopies, carports, and patios .....	42	X	X	145 115	34	X	X	122 687
332322A106	Aluminum sheet metal awnings, canopies, carports, and patios .....	59	X	X	148 869	67	X	X	80 913
332322A111	Sheet metal cornices, skylights, domes, and copings (steel and aluminum) .....	52	X	X	255 079	37	X	X	95 492
332322A116	Sheet metal soffits, fascia, and shutters (steel and aluminum) .....	55	X	X	161 351	49	X	X	182 955
332322AY	Sheet metal awnings, canopies, cornices, and soffits, nsk .....	N	X	X	15 679	N	X	X	N
332322AYVV	Sheet metal awnings, canopies, cornices, and soffits, nsk .....	N	X	X	15 679	N	X	X	6 698

**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332322</b>	<b>Sheet metal work—Con.</b>								
332322C	Sheet metal electronic enclosures . . . . .	N	X	X	3 312 514	N	X	X	1 708 555
332322C1	Steel sheet metal computer and peripheral equipment enclosures . . . . .	N	X	X	1 532 910	N	X	X	N
332322C101	Steel sheet metal computer and peripheral equipment enclosures . . . . .	409	X	X	1 532 910	338	X	X	670 058
332322C2	Aluminum sheet metal computer and peripheral equipment enclosures . . . . .	N	X	X	535 987	N	X	X	N
332322C206	Aluminum sheet metal computer and peripheral equipment enclosures . . . . .	291	X	X	535 987	268	X	X	344 410
332322C3	Other sheet metal electronic enclosures (excluding computers), including machine and motor housings, panels, and guards, steel and aluminum . . . . .	N	X	X	1 203 137	N	X	X	N
332322C311	Other sheet metal electronic enclosures (excluding computers), including machine and motor housings, panels, and guards, steel and aluminum . . . . .	447	X	X	1 203 137	420	X	X	646 887
332322CY	Sheet metal electronic enclosures, nsk . . . . .	N	X	X	40 480	N	X	X	N
332322CYWV	Sheet metal electronic enclosures, nsk . . . . .	N	X	X	40 480	N	X	X	47 200
332322E	Other sheet metal work . . . . .	N	X	X	4 665 962	N	X	X	2 825 779
332322E1	Sheet metal roof ventilators, louvers and dampers for heating, ventilation and air-conditioning, steel and aluminum . . . . .	N	X	X	611 827	N	X	X	N
332322E101	Sheet metal roof ventilators . . . . .	88	X	X	306 080	76	X	X	157 855
332322E106	Sheet metal work for heating, ventilation, and air-conditioning (steel and aluminum) . . . . .	118	X	X	305 747	104	X	X	231 379
332322E2	Steel restaurant and hotel kitchen sheet metal equipment . . . . .	N	X	X	297 196	N	X	X	N
332322E211	Steel restaurant and hotel kitchen sheet metal equipment . . . . .	134	X	X	297 196	138	X	X	250 131
332322E3	Aluminum and other sheet metal work . . . . .	N	X	X	3 604 851	N	X	X	N
332322E321	Aluminum restaurant and hotel kitchen sheet metal equipment . . . . .	24	X	X	49 169	22	X	X	18 628
332322E326	Other steel sheet metal work . . . . .	1 076	X	X	2 514 229	953	X	X	1 441 406
332322E331	Other aluminum sheet metal work . . . . .	412	X	X	688 387	360	X	X	425 295
332322E336	Other sheet metal work (metals other than steel or aluminum) . . . . .	215	X	X	353 066	170	X	X	232 166
332322EY	Other sheet metal work, nsk . . . . .	N	X	X	152 088	N	X	X	N
332322EYWV	Other sheet metal work, nsk . . . . .	N	X	X	152 088	N	X	X	68 919
332322W	Sheet metal work, nsk, total . . . . .	N	X	X	2 150 586	N	X	X	N
332322WY	Sheet metal work, nsk, total . . . . .	N	X	X	2 150 586	N	X	X	N
332322WYWW	Sheet metal work, nsk for nonadministrative-record establishments . . . . .	N	X	X	1 744 065	N	X	X	N
332322WYWY	Sheet metal work, nsk for administrative-record establishments . . . . .	N	X	X	406 521	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for this item in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3323221</b>	<b>SHEET METAL AIR-CONDITIONING DUCTS AND STOVE PIPE</b>		
	<b>United States . . . . .</b>	<b>1 421 645</b>	<b>1 030 509</b>
	Alabama . . . . .	46 572	12 538
	Arizona . . . . .	3 401	N
	Arkansas . . . . .	6 000	N
	California . . . . .	99 066	78 752
	Colorado . . . . .	16 027	N
	Connecticut . . . . .	3 567	3 792
	Florida . . . . .	119 163	88 842
	Georgia . . . . .	29 219	23 285
	Illinois . . . . .	40 970	24 928
	Indiana . . . . .	61 203	54 011

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3323221</b>	<b>SHEET METAL AIR-CONDITIONING DUCTS AND STOVE PIPE—Con.</b>		
	Iowa .....	5 952	5 434
	Kentucky .....	9 567	11 510
	Louisiana .....	14 696	6 444
	Maryland .....	11 843	13 968
	Massachusetts .....	22 665	33 798
	Michigan .....	12 945	10 260
	Minnesota .....	63 499	53 332
	Mississippi .....	66 582	45 966
	Missouri .....	24 787	31 873
	Nevada .....	4 233	3 012
	New Jersey .....	29 131	27 368
	New York .....	88 878	59 421
	North Carolina .....	17 385	11 861
	Ohio .....	91 033	70 802
	Oklahoma .....	3 700	2 202
	Oregon .....	12 229	5 455
	Pennsylvania .....	149 866	100 210
	South Carolina .....	10 013	13 685
	Texas .....	119 634	74 748
	Utah .....	5 500	13 993
	Virginia .....	42 274	22 560
	Washington .....	31 460	15 729
	Wisconsin .....	8 145	10 958
<b>3323223</b>	<b>SHEET METAL CULVERTS, FLUMES, IRRIGATION PIPES, ETC.</b>		
	United States .....	<b>438 724</b>	<b>331 271</b>
	California .....	26 539	14 643
	Florida .....	27 401	23 048
	Michigan .....	12 297	N
	Mississippi .....	30 364	N
	Nebraska .....	22 832	15 465
	Ohio .....	3 373	7 648
<b>3323227</b>	<b>SHEET METAL ROOFING AND ROOF DRAINAGE EQUIPMENT</b>		
	United States .....	<b>1 504 195</b>	<b>1 150 171</b>
	Alabama .....	63 752	22 872
	Arizona .....	3 508	3 775
	California .....	119 267	71 428
	Colorado .....	23 647	N
	Florida .....	40 142	72 019
	Georgia .....	84 588	79 766
	Idaho .....	8 502	N
	Illinois .....	73 890	59 603
	Indiana .....	85 705	N
	Kentucky .....	28 558	29 070
	Louisiana .....	3 393	4 339
	Massachusetts .....	12 430	N
	Michigan .....	20 933	12 002
	Minnesota .....	33 147	N
	Missouri .....	24 319	29 423
	Nevada .....	4 705	N
	New Jersey .....	60 312	17 257
	North Carolina .....	34 618	26 623
	Ohio .....	66 903	87 220
	Oregon .....	19 548	13 751
	Pennsylvania .....	111 698	118 156
	Tennessee .....	75 448	52 230
	Texas .....	184 162	120 505
	Virginia .....	17 267	11 565
	Washington .....	62 598	43 917
<b>3323229</b>	<b>SHEET METAL FLOORING AND SIDING</b>		
	United States .....	<b>1 029 483</b>	<b>834 126</b>
	California .....	104 963	70 561
	Florida .....	17 564	6 154
	Georgia .....	93 504	38 163
	Illinois .....	68 619	96 073
	Indiana .....	48 106	17 396
	Kentucky .....	19 882	N
	Massachusetts .....	4 336	N
	Michigan .....	20 825	3 540
	Missouri .....	12 988	N
	New Jersey .....	89 277	N
	North Carolina .....	17 937	N
	Oregon .....	25 297	9 802
	Pennsylvania .....	34 831	69 871
	Texas .....	83 415	46 227
	Utah .....	22 499	N
	Virginia .....	18 385	N
	Wisconsin .....	2 767	N
<b>332322A</b>	<b>SHEET METAL AWNINGS, CANOPIES, CORNICES, AND SOFFITS</b>		
	United States .....	<b>726 093</b>	<b>488 745</b>
	Alabama .....	13 508	N
	California .....	104 420	35 405
	Florida .....	48 757	32 785
	Maryland .....	6 175	4 205
	Massachusetts .....	7 413	N

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>332322A</b>	<b>SHEET METAL AWNINGS, CANOPIES, CORNICES, AND SOFFITS—Con.</b>		
	Michigan .....	15 225	14 613
	Minnesota .....	7 321	N
	Missouri .....	11 327	N
	New York .....	14 499	N
	Ohio .....	66 619	117 339
	Oregon .....	4 564	9 706
	Pennsylvania .....	22 346	8 700
	Tennessee .....	5 738	6 268
	Texas .....	105 723	33 610
	Washington .....	9 942	5 781
	Wisconsin .....	20 549	9 551
<b>332322C</b>	<b>SHEET METAL ELECTRONIC ENCLOSURES</b>		
	United States .....	<b>3 312 514</b>	<b>1 708 555</b>
	Alabama .....	9 064	14 806
	Arizona .....	69 877	26 416
	California .....	894 474	465 544
	Colorado .....	68 142	36 539
	Connecticut .....	18 148	17 059
	Florida .....	59 533	45 477
	Georgia .....	21 229	16 870
	Illinois .....	173 964	99 315
	Indiana .....	57 960	35 166
	Maryland .....	23 656	15 596
	Massachusetts .....	171 272	126 526
	Michigan .....	80 000	48 740
	Minnesota .....	149 607	75 507
	Missouri .....	21 221	12 564
	Nevada .....	24 658	N
	New Hampshire .....	74 552	17 932
	New Jersey .....	127 373	81 035
	New York .....	174 832	101 943
	North Carolina .....	115 123	21 056
	Ohio .....	55 491	60 027
	Oklahoma .....	13 067	5 845
	Oregon .....	75 202	19 085
	Pennsylvania .....	121 762	124 060
	South Carolina .....	15 337	4 217
	Texas .....	230 916	52 589
	Utah .....	42 009	N
	Virginia .....	15 429	8 367
	Washington .....	92 106	40 818
	Wisconsin .....	135 396	77 738
<b>332322E</b>	<b>OTHER SHEET METAL WORK</b>		
	United States .....	<b>4 665 962</b>	<b>2 825 779</b>
	Alabama .....	77 347	41 145
	Arizona .....	63 387	37 542
	Arkansas .....	71 246	N
	California .....	567 413	270 276
	Colorado .....	114 334	25 816
	Connecticut .....	44 029	47 758
	Florida .....	148 047	40 483
	Georgia .....	87 448	49 056
	Idaho .....	34 329	6 975
	Illinois .....	227 592	198 200
	Indiana .....	202 629	149 347
	Iowa .....	90 440	17 953
	Kansas .....	79 834	55 210
	Kentucky .....	85 994	42 974
	Louisiana .....	17 905	14 893
	Maine .....	4 110	N
	Maryland .....	17 761	9 306
	Massachusetts .....	130 309	86 304
	Michigan .....	198 865	143 740
	Minnesota .....	136 859	84 777
	Mississippi .....	7 407	15 879
	Missouri .....	87 541	44 482
	Nevada .....	19 270	N
	New Hampshire .....	10 486	10 644
	New Jersey .....	177 454	78 113
	New York .....	215 661	194 698
	North Carolina .....	106 920	68 683
	Ohio .....	311 471	245 577
	Oklahoma .....	31 957	19 051
	Oregon .....	66 102	44 696
	Pennsylvania .....	230 201	167 596
	South Carolina .....	29 510	15 295
	Tennessee .....	62 465	35 494
	Texas .....	277 722	174 923
	Utah .....	64 517	23 455
	Virginia .....	33 667	20 719
	Washington .....	87 439	56 816
	West Virginia .....	11 314	N
	Wisconsin .....	323 202	151 044

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for this item in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332322</b>	<b>SHEET METAL WORK MFG</b>				
33272203	Metal bolts, nuts, screws, washers, rivets, and other screw machine products	X	179 156	X	N
33200095	Other fabricated metal products (except forgings)	X	462 576	X	N
33151001	Iron and steel castings (rough and semifinished)	X	33 452	X	N
33152011	Nonferrous (aluminum, copper, etc.) castings (rough and semifinished)	X	41 342	X	N
33210001	Forgings	X	6 306	X	N
33120007	Steel bars, bar shapes, and plates (except castings, forgings, and fabricated metal products)	X	87 476	X	N
33120009	Steel concrete reinforcing bars	X	2 861	X	N
33120017	Steel sheet and strip, including tin plate	X	1 739 608	X	N
33120069	Steel structural shapes (except castings, forgings, and fabricated metal products)	X	123 793	X	N
33120037	All other steel shapes and forms (except castings, forgings, and fabricated metal products)	X	135 981	X	N
33142111	Copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products)	X	18 517	X	N
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing	X	597 729	X	N
33131600	Aluminum and aluminum-base alloy extruded shapes, including extruded rod, bar, pipe, tube, etc.	X	28 314	X	N
33100007	All other aluminum and aluminum-base alloy shapes and forms, including refinery shapes (except castings and forgings)	X	163 371	X	N
33100083	Other nonferrous shapes and forms (except castings, forgings, and fabricated metal products)	X	48 385	X	N
00190060	Scrap, including iron, steel, aluminum and aluminum-base alloy (excluding home scrap)	X	39 712	X	N
32721101	Flat glass (plate, float, and sheet)	X	16 787	X	N
32221001	Paperboard containers, boxes, and corrugated paperboard	X	90 379	X	N
32551003	Paints, varnishes, lacquers, stains, shellacs, japans, enamels, and allied products	X	110 586	X	N
00970099	All other materials and components, parts, containers, and supplies	X	875 224	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	1 210 674	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.



# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332322 SHEET METAL WORK MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing sheet metal work (except stampings).

The data published with NAICS code 332322 include the following SIC industry:

3444 Sheet metal work (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.



In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.



Appendix G.
Comparability of Product Classes and Product Codes:
1997 to 1992

Table with columns for 1997 published, 1997 collected, and 1992 published, repeated for each of the three years. It contains a large number of rows mapping product codes between the different years.

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3323111	34481	34481	332313251	3442298	3442298	3323233YVW pt	3446200	3446200
332311106	3448117	3448117	332321306	3442221	3442221	3323233YVW pt	3446200	3446200
3323111111	3448118	3448118	3323213YVW	3442200	3442200	3323235	34463	34463
332311201	3448115	3448115	3323215 pt	24991 pt	24991 pt	3323235101	3446310	3446310
332311YVW	3448100	3448100	3323215 pt	34423	34423	3323235106	3446312	3446312
3323113	34482	34482	3323215 pt	34497	34497	3323235211	3446320	3446320
3323113101	3448211	3448211	332321501 pt	3442321	3442321	3323235216	3446322	3446322
3323113106	3448214	3448214	332321501 pt	3449773	3449773	3323235YVW	3446300	3446300
3323113111	3448215	3448215	332321506 pt	2499141	2499141	3323237	34464	34464
3323113216	3448216	3448216	332321506 pt	3442325	3442325	3323237101	3446410	3446410
3323113221	3448217	3448217	332321506 pt	3449775	3449775	3323237106	3446413	3446413
3323113226	3448218	3448218	3323215111 pt	3442351	3442351	3323237111	3446416	3446416
3323113231	3448226	3448226	3323215111 pt	3449779	3449779	3323237116	3446418	3446418
3323113236	3448227	3448227	3323215YVW pt	2499100 pt	2499100 pt	3323237YVW	3446400	3446400
3323113241	3448254	3448254	3323215YVW pt	3442300	3442300	3323239 pt	34465	34465
3323113YVW	3448200	3448200	3323215YVW pt	3449700	3449700	3323239 pt	3523E pt	3523E pt
3323114W	34480	34480	3323217	34424	34424	3323239106	3446512	3446512
3323114YVW	3448000	3448000	3323217101	3442411	3442411	3323239111	3446530	3446530
3323114YVW	3448002	3448002	3323217106	3442412	3442412	3323239201	3446510	3446510
3323121 pt	34411	34411	3323217111	3442413	3442413	3323239311	3523E84	3523E00 pt
3323121 pt	34494	34494	3323217YVW	3442400	3442400	3323239YVW pt	3446500	3446500
3323121101 pt	3441141	3441141	3323219	34425	34425	3323239YVW pt	3523E00 pt	3523E00 pt
3323121101 pt	3449443	3449443	3323219101	3442511	3442511	332323W pt	34460	34460
3323121206 pt	3441142	3441142	3323219106	3442512	3442512	332323W pt	34490 pt	34490 pt
3323121206 pt	3449447	3449447	3323219111	3442551	3442551	332323W pt	34490 pt	34490 pt
3323121211 pt	3441143	3441143	3323219YVW	3442500	3442500	332323W pt	35230 pt	35230 pt
3323121211 pt	3449452	3449452	3323219YVW pt	24990 pt	24990 pt	332323WYVW pt	3446000	3446000
3323121216	3441144	3441144	332321W pt	34420	34420	332323WYVW pt	3449000 pt	3449000 pt
3323121221	3441146	3441146	332321W pt	34420	34420	332323WYVW pt	3523000 pt	3523000 pt
3323121226	3441147	3441147	332321W pt	34490 pt	34490 pt	332323WYVW pt	3446002	3446002
3323121231	3441171	3441171	332321WYVW pt	2499000 pt	2499000 pt	332323WYVW pt	3449002 pt	3449002 pt
3323121YVW pt	3441100	3441100	332321YVW pt	3442000	3442000	332323WYVW pt	3523002 pt	3523002 pt
3323121YVW pt	3449400	3449400	332321YVW pt	3449000 pt	3449000 pt	3324101	34431	34431
3323123	34412	34412	332321YVW pt	2499002 pt	2499002 pt	3324101101	3443113	3443113
3323123100	3441200	3441200	332321YVW pt	3442002	3442002	3324101206	3443118	3443118
3323125	34413	34413	332321YVW pt	3449002 pt	3449002 pt	3324101311	3443155	3443155
3323125106	3441320	3441320	3323221	34441	34441	3324101YVW	3443100	3443100
3323125111	3441323	3441323	3323221101	3444121	3444121	3324105	34433	34433
3323125116	3441326	3441326	3323221106	3444123	3444123	3324105101	3443308	3443308
3323125121	3441329	3441329	3323221211	3444127	3444127	3324105106 pt	3443331 pt	3443331 pt
3323125126	3441359	3441359	3323221216	3444129	3444129	3324105106 pt	3443331 pt	3443331 pt
3323125131	3441384	3441384	3323221YVW	3444100	3444100	3324105111 pt	3443332 pt	3443332 pt
3323125136	3441398	3441398	3323223	34442	34442	3324105111 pt	3443332 pt	3443332 pt
3323125201	3441316	3441316	3323223101	3444213	3444213	3324105126 pt	3443333 pt	3443333 pt
3323125YVW	3441300	3441300	3323223106	3444215	3444215	3324105126 pt	3443333 pt	3443333 pt
332312W pt	34410	34410	3323223111	3444219	3444219	3324105131 pt	3443336 pt	3443336 pt
332312W pt	34490 pt	34490 pt	3323223YVW	3444200	3444200	3324105131 pt	3443336 pt	3443336 pt
332312WYVW pt	3441000	3441000	3323227	34444	34444	3324105146	3443339	3443339
332312WYVW pt	3449000 pt	3449000 pt	3323227101	3444411	3444411	3324105151 pt	3443342 pt	3443342 pt
332312WYVW pt	3441002	3441002	3323227206	3444417	3444417	3324105151 pt	3443343 pt	3443343 pt
332312WYVW pt	3449002 pt	3449002 pt	3323227211	3444423	3444423	3324105161 pt	3443343 pt	3443343 pt
3323130 pt	34430 pt	34430 pt	3323227216	3444429	3444429	3324105161 pt	3443345 pt	3443345 pt
3323130 pt	34432 pt	34432 pt	3323227221	3444431	3444431	3324105171 pt	3443345 pt	3443345 pt
3323130111	3443244	3443244	3323227YVW	3444400	3444400	3324105181	3443348	3443348
3323130116	3443246	3443246	3323229	34445	34445	3324105186	3443351	3443351
3323130121	3443248	3443248	3323229106	3444516	3444516	3324105291	3443352	3443352
3323130226	3443252	3443252	3323229111	3444517	3444517	3324105YVW	3443300	3443300
3323130231	3443254	3443254	3323229116	3444518	3444518	332410W	34430 pt	34430 pt
3323130236	3443256	3443256	3323229121	3444519	3444519	332410WYVW	3443000 pt	3443000 pt
3323130301	3443221	3443221	3323229201	3444505	3444505	332410WYVW	3443002 pt	3443002 pt
3323130346	3443299	3443298 pt	3323229YVW	3444500	3444500	3324207	34434	34434
3323130406	3443236	3443236	332322A	34447	34447	3324207101	3443414	3443414
3323130YVW pt	3443000 pt	3443000 pt	332322A101	3444721	3444721	3324207106	3443416	3443416
3323130YVW pt	3443200	3443200	332322A106	3444725	3444725	3324207YVW	3443400	3443400
3323130YVW	3443002 pt	3443002 pt	332322A111	3444731	3444731	3324209	34435	34435
3323211	34421	34421	332322A116	3444741	3444741	3324209101	3443520	3443520
3323211110	3442111	3442111	332322AYVW	3444700	3444700	3324209106	3443535	3443535
3323211113	3442116	3442116	332322C	34448	34448	3324209111	3443542	3443542
3323211116	3442119	3442119	332322C101	3444811	3444811	3324209YVW	3443500	3443500
3323211119	3442121	3442121	332322C206	3444813	3444813	332420A	34436	34436
3323211201	3442105	3442105	332322C311	3444819	3444819	332420A100	3443600	3443600
3323211204	3442107	3442107	332322CYVW	3444800	3444800	332420C	34437	34437
3323211207	3442109	3442109	332322E	34449	34449	332420C101	3443712	3443712
3323211222	3442122	3442122	332322E101	3444931	3444931	332420C106	3443715	3443715
3323211225	3442123	3442123	332322E106	3444941	3444941	332420C111	3443717	3443717
3323211328	3442124	3442124	332322E211	3444953	3444953	332420C116	3443719	3443719
3323211331	3442125	3442125	332322E321	3444955	3444955	332420C121	3443748	3443748
3323211334	3442126	3442126	332322E326	3444962	3444962	332420C126	3443750	3443750
3323211440	3442128	3442128	332322E331	3444965	3444965	332420CYVW	3443700	3443700
3323211443	3442130	3442130	332322E336	3444998	3444998	332420E	34438	34438
3323211446	3442131	3442131	332322EYVW	3444900	3444900	332420E101	3443803	3443803
3323211549	3442132	3442132	332322W	34440 pt	34440 pt	332420E106	3443805	3443805
3323211552	3442134	3442134	332322WYVW	3444000 pt	3444000 pt	332420E211	3443808	3443808
3323211555	3442136	3442136	332322WYVW	3444002 pt	3444002 pt	332420E216	3443813	3443813
3323211661	3442142	3442142	3323231	34461	34461	332420E221	3443820	3443820
3323211664	3442143	3442143	3323231106	3446112	3446112	332420E226	3443822	3443822
3323211667	3442144	3442144	3323231111	3446115	3446115	332420EYVW	3443800	3443800
3323211758	3442139	3442139	3323231116	3446117	3446117	332420G	34439	34439
3323211770	3442145	3442145	3323231201	3446110	3446110	332420G101	3443915	3443915
3323211837	3442127	3442127	3323231YVW	3446100	3446100	332420G106	3443917	3443917
332321YVW	3442100	3442100	3323233 pt	34496	34496	332420G111	3443919	3443919
3323213	34422	34422	3323233101	3449610	3449610	332420G116	3443923	3443923
3323213101	3442220	3442220	3323233101 pt	3449611	3449611	332420G121	3443931	3443931
3323213111	3442222	3442222	3323233106 pt	3449632	3449632	332420G126	3443932	3443932
3323213116	3442224	3442224	3323233106 pt	3449622	3449622	332420G131	3443933	3443933
3323213121	3442230	3442230	3323233216	3449622	3449622	332420G136	3443934	3443934
3323213226	3442235	3442235	3323233216	3449622	3449622	332420G141	3443936	3443936
3323213231	3442241	3442241	3323233216	3449622	3449622	332420G246	3443951	3443951
3323213236	3442242	3442242	3323233221	3449626	3449626	332420G351	3443953	3443953
3323213241	3442243	3442243						
3323213246	3442249	3442249						

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
332420G356 .....	3443958 .....	3443958 .....	3325105 .....	34296 .....	34296 .....	332618BYWV .....	3496800 .....	3496800 .....
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332420W .....	34430 pt .....	34430 pt .....	3325107 .....	34297 .....	34297 .....	332618W pt .....	33990 pt .....	33990 pt .....
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332431W .....	34110 .....	34110 .....	3325109121 .....	3429898 .....	3429898 .....	3327100000 .....	3599500 .....	3599500 .....
332431WYVW .....	3411000 .....	3411000 .....	3325109199 .....	3429900 .....	3429900 .....	3327100YWW .....	3599000 pt .....	3599000 pt .....
332431WYVW .....	3411002 .....	3411002 .....	3325109YVW .....	3429800 .....	3429800 .....	3327100YVW .....	3599002 pt .....	3599002 pt .....
3324391 pt .....	34121 .....	34121 .....	332510W pt .....	34290 pt .....	34290 pt .....	3327211 .....	34511 .....	34511 .....
3324391 pt .....	34998 pt .....	34998 pt .....	332510W pt .....	34990 pt .....	34990 pt .....	332721100Y .....	3451100 .....	3451100 .....
3324391100 .....	3412100 pt .....	3412100 pt .....	332510WYVW pt .....	3429000 pt .....	3429000 pt .....	3327215 .....	34512 .....	34512 .....
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332439WYVW pt .....	3429000 pt .....	3429000 pt .....	3326124201 .....	3495311 .....	3495311 .....	3327223133 .....	3452419 .....	3452419 .....
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332439WYVW pt .....	3429002 pt .....	3429002 pt .....	3326124YVW .....	3495300 pt .....	3495300 pt .....	3327225 .....	34525 .....	34525 .....
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332439WYVW pt .....	3537002 pt .....	3537002 pt .....	332612WYVW .....	3495002 pt .....	3495002 pt .....	3327225189 .....	3452589 .....	3452589 .....
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3325101106 .....	3429213 .....	3429213 .....	3326181103 .....	3496115 .....	3496115 .....	3327227109 .....	3452609 .....	3452609 .....
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3325101116 .....	3429216 .....	3429216 .....	3326181107 .....	3496152 .....	3496152 .....	3327227135 .....	3452635 .....	3452635 .....
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3325103125 .....	3499117 .....	3499117 .....	3326187 .....	34966 .....	34966 .....	332722WYWWW .....	3452000 .....	3452000 .....
3325103126 .....	3429418 .....	3429418 .....	3326187101 .....	3496613 .....	3496613 .....	332722YVW .....	3452002 .....	3452002 .....
3325103128 .....	3499143 .....	3499198 pt .....	3326187103 .....	3496621 .....	3496621 .....	3328110 .....	33980 .....	33980 .....
3325103129 .....	3499141 .....	3499141 .....	3326187105 .....	3496635 .....	3496635 .....	3328110100 .....	3398000 pt .....	3398000 pt .....
3325103131 .....	3429419 .....	3429419 .....	3326187107 .....	3496671 .....	3496671 .....	3328110YVW .....	3398000 pt .....	3398000 pt .....
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3325103336 .....	3429423 .....	3429423 .....	3326189103 .....	3315204 .....	3315203 pt .....	3328120106 .....	3479011 .....	3479011 .....
3325103341 .....	3429424 .....	3429424 .....	3326189105 .....	3315206 .....	3315205 pt .....	3328120111 .....	3479013 .....	3479013 .....
3325103346 .....	3429427 .....	3429427 .....	3326189107 .....	3315208 .....	3315207 pt .....	3328120116 .....	3479028 .....	3479028 pt .....
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3325103365 .....	3429443 .....	3429443 .....	3326189111 pt .....	3315212 pt .....	3315213 pt .....	3328120221 .....	3479031 .....	3479031 .....
3325103367 .....	3429444 .....	3429444 .....	3326189113 .....	3315215 .....	3315216 pt .....	3328120326 .....	3479061 .....	3479061 .....
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3325103571 .....	3429453 .....	3429453 .....	3326189121 .....	3315231 .....	3315230 pt .....	3328120YVW .....	3479002 pt .....	3479002 pt .....
3325103573 .....	3429454 .....	3429454 .....	3326189YVW .....	3315200 pt .....	3315200 pt .....	3328130 .....	34710 .....	34710 .....
3325103575 .....	3429461 .....	3429461 .....	332618B .....	34968 .....	34968 .....	3328130100 .....	3471000 pt .....	3471000 pt .....
3325103579 .....	3429462 .....	3429462 .....	332618B105 .....	3496855 .....	3496855 .....	3328130YVW .....	3471000 pt .....	3471000 pt .....
3325103581 .....	3429464 .....	3429464 .....	332618B217 .....	3496883 .....	3496883 .....	3328130YVW .....	3471002 .....	3471002 .....
3325103583 .....	3429466 .....	3429466 .....	332618B319 .....	3496885 .....	3496885 .....	3329111 .....	34911 .....	34911 .....
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3325103691 .....	3429491 .....	3429491 .....	332618B409 .....	3496871 .....	3496871 .....	3329111107 .....	3491134 .....	3491134 .....
3325103699 .....	3429498 .....	3429498 .....	332618B411 .....	3496873 .....	3496873 .....	3329111109 .....	3491138 .....	3491138 .....
3325103711 .....	3429500 .....	3429500 .....	332618B413 .....	3496881 .....	3496881 .....	3329111111 .....	3491143 .....	3491143 .....
3325103711 pt .....								

Table with 10 columns: 1997 published, 1997 collected, 1992 published, 1997 published, 1997 collected, 1992 published, 1997 published, 1997 collected, 1992 published. Rows list various product codes and their corresponding published and collected years.

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3329991	34971	34971	332999AYWV	3499500	3499500	332999GYWV pt...	3999900 pt	3999900 pt
3329991101	3497132	3497132	332999G pt	32918 pt	32918 pt	332999W pt	32910 pt	32910 pt
3329991106	3497133	3497133	332999G pt	34323 pt	34323 pt	332999W pt	34320 pt	34320 pt
3329991111	3497137	3497137	332999G pt	34945 pt	34945 pt	332999W pt	34940 pt	34940 pt
3329991YVV	3497100	3497100	332999G pt	34998 pt	34998 pt	332999W pt	34970 pt	34970 pt
3329993	34973	34973	332999G pt	34998 pt	34998 pt	332999W pt	34990 pt	34990 pt
3329993101	3497352	3497352	332999G pt	35373 pt	35373 pt	332999W pt	34990 pt	34990 pt
3329993106	3497354	3497354	332999G pt	39999 pt	39999 pt	332999W pt	35370 pt	35370 pt
3329993111	3497358	3497358	332999G101	3499811	3499811	332999W pt	35990 pt	35990 pt
3329993YVV	3497300	3497300	332999G106	3499819	3499819	332999W pt	39990 pt	39990 pt
3329994	35994 pt	35994 pt	332999G189	3494571	3494571	332999W pt	3291000 pt	3291000 pt
3329994101	3599411	3599411	332999G301	3499829	3499829	332999WYVVV pt...	3432000 pt	3432000 pt
3329994106	3599413	3599413	332999G303	3499839	3499839	332999WYVVV pt...	3494000 pt	3494000 pt
3329994111	3599415	3599415	332999G305	3537331	3537331	332999WYVVV pt...	3497000 pt	3497000 pt
3329994116	3599416	3599416	332999G306 pt	3999991 pt	3999913 pt	332999WYVVV pt...	3499000 pt	3499000 pt
3329994121	3599425	3599425	332999G306 pt	3999991 pt	3999944 pt	332999WYVVV pt...	3537000 pt	3537000 pt
3329994YVV	3599400 pt	3599400 pt	332999G306 pt	3999991 pt	3999999 pt	332999WYVVV pt...	3599000 pt	3599000 pt
3329997	34992	34992	332999G313	3291831	3291831	332999WYVVV pt...	3999000 pt	3999000 pt
3329997101	3499211	3499211	332999G316	3291835	3291890 pt	332999WYVVV pt...	3291002 pt	3291002 pt
3329997106	3499213	3499213	332999G399 pt	3432329	3432332 pt	332999WYVVV pt...	3432002 pt	3432002 pt
3329997YVV	3499200	3499200	332999G399 pt	3499898	3499899 pt	332999WYVVV pt...	3494002 pt	3494002 pt
3329999	34993	34993	332999GYWV pt...	3291800 pt	3291800 pt	332999WYVVV pt...	3497002 pt	3497002 pt
3329999100	3499300	3499300	332999GYWV pt...	3432300 pt	3432300 pt	332999WYVVV pt...	3499002 pt	3499002 pt
332999A	34995	34995	332999GYWV pt...	3494500 pt	3494500 pt	332999WYVVV pt...	3537002 pt	3537002 pt
332999A101	3499511	3499511	332999GYWV pt...	3499800 pt	3499800 pt	332999WYVVV pt...	3599002 pt	3599002 pt
332999A106	3499521	3499521	332999GYWV pt...	3537300 pt	3537300 pt	332999WYVVV pt...	3999002 pt	3999002 pt
332999A111	3499531	3499531						
332999A116	3499539	3499539						



# Ornamental and Architectural Metal Work Manufacturing

# 1997

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## 1997 Economic Census

*Manufacturing*

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## ACKNOWLEDGMENTS

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# Ornamental and Architectural Metal Work Manufacturing

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special



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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Companies <sup>1</sup>	All establishments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332323</b>	<b>Ornamental &amp; architectural metal work mfg</b>	<b>1 826</b>	<b>1 872</b>	<b>34 252</b>	<b>971 863</b>	<b>24 314</b>	<b>48 766</b>	<b>575 003</b>	<b>2 116 765</b>	<b>1 845 506</b>	<b>3 964 231</b>	<b>77 590</b>
344600	Architectural metal work	N	1 742	30 907	873 710	22 107	44 144	518 913	1 939 411	1 598 245	3 531 329	66 981
344940	Miscellaneous metal work (pt)	N	6	349	9 455	211	435	5 758	36 286	54 363	91 939	862
352320	Farm machinery & equipment (pt)	N	124	2 996	88 698	1 996	4 187	50 332	141 068	192 898	340 963	9 747

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332323, ORNAMENTAL &amp; ARCHITECTURAL METAL WORK MFG</b>												
<b>United States</b>	<b>1</b>	<b>1 872</b>	<b>380</b>	<b>34 252</b>	<b>971 863</b>	<b>24 314</b>	<b>48 766</b>	<b>575 003</b>	<b>2 116 765</b>	<b>1 845 506</b>	<b>3 964 231</b>	<b>77 590</b>
Alabama	-	39	13	1 726	47 191	1 248	2 380	28 376	121 335	85 253	207 543	3 786
Arizona	-	52	8	963	22 965	813	1 689	16 299	54 682	35 564	89 505	1 619
Arkansas	-	14	4	172	3 464	111	200	2 089	6 875	6 859	13 684	431
California	1	205	33	2 532	73 286	1 779	3 461	43 399	154 458	163 603	321 096	4 239
Colorado	2	37	6	439	12 359	305	560	7 391	28 679	20 375	48 715	1 061
Connecticut	-	28	7	451	17 222	292	634	8 984	36 991	33 968	70 200	1 867
Florida	1	117	15	1 995	42 778	1 580	3 062	27 587	107 662	60 347	169 048	3 210
Georgia	1	51	8	721	19 326	492	863	10 366	47 121	52 764	100 028	2 005
Illinois	-	78	27	2 883	95 223	1 931	4 500	54 552	210 856	186 041	401 802	5 173
Indiana	-	34	12	1 009	28 338	672	1 300	15 536	53 086	47 814	99 720	3 087
Iowa	-	29	12	795	16 398	645	1 172	12 550	40 336	47 830	89 491	1 941
Kansas	1	31	4	377	10 559	283	560	6 441	22 102	26 226	48 170	1 202
Kentucky	2	39	5	372	7 299	213	386	4 656	14 046	17 130	31 278	946
Louisiana	1	18	4	184	5 912	124	240	3 199	16 763	7 362	24 598	330
Maryland	1	32	10	702	20 775	455	981	11 921	39 373	40 034	80 053	1 699
Massachusetts	-	50	10	796	23 996	497	1 017	13 580	48 728	33 612	81 744	2 441
Michigan	-	42	7	1 190	39 891	898	1 780	24 559	90 077	40 922	130 904	3 886
Minnesota	1	35	6	397	11 269	260	520	6 426	23 075	19 268	42 652	1 083
Missouri	1	44	10	1 032	23 770	681	1 332	13 844	48 570	39 034	86 733	1 982
Nebraska	1	13	2	401	10 337	300	651	8 077	9 685	26 030	36 051	750
Nevada	-	11	3	142	3 885	99	212	2 358	9 911	11 198	21 233	346
New Jersey	1	55	7	547	20 500	377	737	10 321	50 495	39 312	89 745	1 290
New Mexico	4	20	2	129	2 864	94	170	1 838	7 110	4 179	11 388	245
New York	1	124	21	1 399	44 769	888	1 763	24 834	92 732	72 247	162 484	3 562
North Carolina	-	50	12	1 356	39 737	907	1 847	19 328	54 353	94 243	151 033	2 327
Ohio	-	65	23	1 927	62 471	1 377	2 834	36 265	132 419	187 902	318 466	4 906
Oklahoma	1	25	7	817	17 175	695	1 261	13 080	52 946	25 290	78 621	1 887
Oregon	1	32	3	317	8 521	227	421	4 489	18 058	13 143	30 660	664
Pennsylvania	1	97	24	1 780	56 849	1 234	2 687	32 930	119 813	84 745	204 293	4 477
South Carolina	1	25	4	260	6 369	161	330	3 560	24 569	13 566	38 401	721
Tennessee	1	29	6	520	15 229	360	689	8 748	38 737	26 712	63 977	1 027
Texas	-	129	27	2 759	68 682	2 082	4 206	42 266	157 478	129 871	287 050	5 007
Utah	1	22	5	383	12 635	293	573	7 081	22 115	21 776	43 927	732
Virginia	5	24	4	299	9 097	198	393	5 397	17 437	10 156	27 571	875
Washington	1	49	8	568	15 572	425	843	10 489	34 360	27 185	60 758	1 662
Wisconsin	1	42	10	1 062	32 172	710	1 409	17 354	60 218	56 284	114 926	2 532

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332323, ORNAMENTAL &amp; ARCHITECTURAL METAL WORK MFG</b>		<b>332323, ORNAMENTAL &amp; ARCHITECTURAL METAL WORK MFG—Con.</b>	
Companies <sup>1</sup> .....	number.. 1 826	Value added .....	\$1,000.. 2 116 765
All establishments .....	number.. 1 872	Total inventories, beginning of year .....	\$1,000.. 472 357
Establishments with 1 to 19 employees .....	number.. 1 492	Finished goods inventories, beginning of year .....	\$1,000.. 178 494
Establishments with 20 to 99 employees .....	number.. 322	Work-in-process inventories, beginning of year .....	\$1,000.. 95 869
Establishments with 100 employees or more .....	number.. 58	Materials and supplies inventories, beginning of year .....	\$1,000.. 197 994
All employees .....	number.. 34 252	Total inventories, end of year .....	\$1,000.. 471 465
Total compensation <sup>2</sup> .....	\$1,000.. 1 196 872	Finished goods inventories, end of year .....	\$1,000.. 169 633
Annual payroll .....	\$1,000.. 971 863	Work-in-process inventories, end of year .....	\$1,000.. 102 770
Total fringe benefits .....	\$1,000.. 225 009	Materials and supplies inventories, end of year .....	\$1,000.. 199 062
Production workers, average for year .....	number.. 24 314	Gross book value of total assets at beginning of year .....	\$1,000.. 839 139
Production workers on March 12 .....	number.. 23 861	Total capital expenditures (new and used) .....	\$1,000.. 77 590
Production workers on May 12 .....	number.. 24 156	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 11 977
Production workers on August 12 .....	number.. 24 707	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 65 613
Production workers on November 12 .....	number.. 24 532	Total retirements <sup>2</sup> .....	\$1,000.. 18 720
Production-worker hours .....	1,000.. 48 766	Gross book value of total assets at end of year .....	\$1,000.. 898 009
Production-worker wages .....	\$1,000.. 575 003	Total depreciation during year <sup>2</sup> .....	\$1,000.. 63 117
Total cost of materials .....	\$1,000.. 1 845 506	Total rental payments <sup>2</sup> .....	\$1,000.. 64 232
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 1 620 589	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 28 671
Cost of resales .....	\$1,000.. 108 356	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 35 561
Cost of fuels .....	\$1,000.. 14 576	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 5 066
Cost of purchased electricity .....	\$1,000.. 27 037	Response coverage ratio <sup>4</sup> .....	percent.. 68
Cost of contract work .....	\$1,000.. 74 948	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 14 038
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 408 596	Response coverage ratio <sup>4</sup> .....	percent.. 68
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 7 400
Total value of shipments .....	\$1,000.. 3 964 231	Response coverage ratio <sup>4</sup> .....	percent.. 68
Primary products value of shipments .....	\$1,000.. 3 403 763	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 3 649
Secondary products value of shipments .....	\$1,000.. 352 282	Response coverage ratio <sup>4</sup> .....	percent.. 68
Total miscellaneous receipts .....	\$1,000.. 208 186	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 3 734
Value of resales .....	\$1,000.. 158 310	Response coverage ratio <sup>4</sup> .....	percent.. 68
Contract receipts .....	\$1,000.. 22 433	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 9 983
Other miscellaneous receipts .....	\$1,000.. 27 443	Response coverage ratio <sup>4</sup> .....	percent.. 68
Primary products specialization ratio .....	percent.. 90	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 1 729
Value of primary products shipments made in all industries .....	\$1,000.. 3 906 176	Response coverage ratio <sup>4</sup> .....	percent.. 68
Value of primary products shipments made in this industry .....	\$1,000.. 3 403 763	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 1 343
Value of primary products shipments made in other industries .....	\$1,000.. 502 413	Response coverage ratio <sup>4</sup> .....	percent.. 68
Coverage ratio .....	percent.. 87		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332323, ORNAMENTAL &amp; ARCHITECTURAL METAL WORK MFG</b>												
<b>All establishments .....</b>	<b>1</b>	<b>1 872</b>	<b>380</b>	<b>34 252</b>	<b>971 863</b>	<b>24 314</b>	<b>48 766</b>	<b>575 003</b>	<b>2 116 765</b>	<b>1 845 506</b>	<b>3 964 231</b>	<b>77 590</b>
Establishments with 1 to 4 employees .....	8	792	—	1 570	34 194	1 107	1 678	20 333	78 710	55 168	134 097	4 415
Establishments with 5 to 9 employees .....	4	378	—	2 578	63 305	1 728	3 030	37 925	141 214	103 446	244 948	6 533
Establishments with 10 to 19 employees .....	1	322	—	4 355	125 459	3 064	5 948	74 667	269 099	181 155	449 366	10 022
Establishments with 20 to 49 employees .....	1	245	245	7 343	223 128	4 992	10 079	126 923	477 802	394 049	870 282	16 908
Establishments with 50 to 99 employees .....	—	77	77	5 225	165 902	3 427	7 169	89 721	390 664	335 986	725 073	12 611
Establishments with 100 to 249 employees .....	—	40	40	5 637	158 606	4 191	8 787	98 898	329 562	410 628	736 070	13 716
Establishments with 250 to 499 employees .....	—	14	14	5 160	129 801	3 976	8 171	82 293	267 242	263 103	533 367	7 544
Establishments with 500 to 999 employees .....	—	4	4	2 384	71 468	1 829	3 904	44 243	162 472	101 971	271 028	5 841
Establishments with 1,000 to 2,499 employees .....	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 2,500 employees or more .....	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records <sup>2</sup> .....	9	824	—	2 453	49 392	1 634	2 438	29 911	101 100	80 552	181 939	7 446

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332323</b>	<b>Ornamental &amp; architectural metal work mfg .....</b>	<b>1 872</b>	<b>34 252</b>	<b>971 863</b>	<b>24 314</b>	<b>48 766</b>	<b>575 003</b>	<b>2 116 765</b>	<b>1 845 506</b>	<b>3 964 231</b>	<b>77 590</b>
3323231	Metal grilles, registers, and air diffusers .....	39	5 573	128 647	4 736	9 561	92 146	296 344	174 642	471 434	12 203
3323233	Ornamental and architectural metal work .....	433	9 786	293 185	6 822	13 958	168 362	619 321	503 168	1 128 135	19 454
3323235	Open metal flooring, grating, and studs .....	55	3 160	93 453	2 113	4 356	54 622	267 896	294 333	559 801	6 437
3323237	Metal scaffolding and shoring and forming for concrete work .....	72	3 351	99 511	2 363	4 806	58 388	224 497	192 649	414 387	7 824
3323239	Other architectural and ornamental work .....	264	7 763	243 168	5 156	10 876	133 169	477 377	501 326	979 733	17 604

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332323</b>	<b>Ornamental and architectural metal work</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>3 906 176</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3323231	Metal grilles, registers, and air diffusers	N	X	X	480 428	N	X	X	321 641
33232311	Other grilles, including open mesh partitions	N	X	X	169 194	N	X	X	N
3323231106	Aluminum warm air or air-conditioning grilles, registers, and air diffusers	16	X	X	135 232	20	X	X	79 375
3323231111	Other iron and steel grilles (including open mesh partitions)	11	X	X	15 694	9	X	X	12 075
3323231116	Other aluminum grilles (including open mesh partitions)	6	X	X	18 268	11	X	X	14 653
33232312	Iron and steel warm air or air-conditioning grilles, registers, and air diffusers	N	X	X	308 045	N	X	X	N
3323231201	Iron and steel warm air or air-conditioning grilles, registers, and air diffusers	36	X	X	308 045	26	X	X	210 749
3323231Y	Metal grilles, registers, and air diffusers, nsk	N	X	X	3 189	N	X	X	N
3323231YWV	Metal grilles, registers, and air diffusers, nsk	N	X	X	3 189	N	X	X	4 789
3323233	Ornamental and architectural metal work	N	X	X	1 187 717	N	X	X	N
33232331	Iron, steel, and aluminum stairs, staircases, and fire escapes	N	X	X	632 482	N	X	X	N
3323233101	Iron and steel stairs, staircases, fire escapes, and expanded metal plaster lath	556	X	X	520 276	N	X	X	N
3323233106	Aluminum stairs, staircases, fire escapes, and metal plaster base accessories (including corner beads, screens, grounds, etc)	59	X	X	112 206	N	X	X	N
33232332	Fences, gates (other than wire), and railings and window guards, made of aluminum or steel	N	X	X	547 094	N	X	X	N
3323233211	Iron and steel fences and gates (other than wire)	221	X	X	306 681	156	X	X	124 412
3323233216	Aluminum fences and gates (other than wire)	41	X	X	41 909	30	X	X	14 911
3323233221	Metal railings and window guards (iron, steel, and aluminum, other than wire)	239	X	X	198 504	178	X	X	106 356
3323233Y	Ornamental and architectural metal work, nsk	N	X	X	8 141	N	X	X	N
3323233YWV	Ornamental and architectural metal work, nsk	N	X	X	8 141	N	X	X	N
3323235	Open metal flooring, grating, and studs	N	X	X	496 697	N	X	X	325 454
33232351	Open iron, steel, and aluminum flooring and grating for building construction	N	X	X	355 349	N	X	X	N
3323235101	Open iron and steel flooring and grating for building construction	138	X	X	327 620	96	X	X	219 885
3323235106	Open aluminum flooring and grating for building construction	18	X	X	27 729	18	X	X	27 163
33232352	Studs, nonload and load-bearing iron, steel and aluminum	N	X	X	141 348	N	X	X	N
3323235211	Nonload-bearing studs (iron, steel, and aluminum)	8	X	X	118 433	10	X	X	49 801
3323235216	Load-bearing studs (iron, steel, and aluminum)	7	X	X	22 915	10	X	X	21 696
3323235Y	Open metal flooring, grating, and studs, nsk	N	X	X	-	N	X	X	N
3323235YWV	Open metal flooring, grating, and studs, nsk	N	X	X	-	N	X	X	6 909
3323237	Metal scaffolding and shoring and forming for concrete work	N	X	X	401 366	N	X	X	241 538
33232371	Metal scaffolding and shoring and forming for concrete work	N	X	X	401 366	N	X	X	N
3323237101	Suspended scaffolding (including midpoint, two-point, multilevel, boatswain chairs, etc.) (iron, steel, and aluminum)	15	X	X	45 476	14	X	X	49 151
3323237106	Access scaffolding, (including tube and coupler system, prefabricated mobil scaffolds, etc.) (iron, steel, and aluminum)	23	X	X	158 692	24	X	X	48 766
3323237111	Shoring (including flying forms, postshores, ellis clamps, reshores, etc.) (iron, steel, and aluminum)	7	X	X	21 843	8	X	X	22 884
3323237116	Forming (including modular, prefabricated custom design, etc.) (iron, steel, aluminum, and all other material-metal combinations)	55	X	X	175 355	44	X	X	120 737
3323237Y	Metal scaffolding and shoring and forming for concrete work, nsk	N	X	X	-	N	X	X	N
3323237YWV	Metal scaffolding and shoring and forming for concrete work, nsk	N	X	X	-	N	X	X	-

See footnotes at end of table.

**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332323</b>	<b>Ornamental and architectural metal work—Con.</b>								
3323239	Other architectural and ornamental work .....	N	X	X	932 933	N	X	X	N
33232391	Other aluminum and metal architectural and ornamental work .....	N	X	X	217 468	N	X	X	N
3323239106	Other aluminum architectural and ornamental work .....	101	X	X	142 161	86	X	X	135 263
3323239111	Other metal architectural and ornamental work (other than iron, steel, or aluminum) .....	50	X	X	75 307	53	X	X	51 960
33232392	Other iron and steel architectural and ornamental work .....	N	X	X	464 343	N	X	X	N
3323239201	Other iron and steel architectural and ornamental work .....	275	X	X	464 343	217	X	X	419 079
33232393	Metal stalls and corrals .....	N	X	X	226 048	N	X	X	N
3323239311	Metal stalls and corrals .....	51	X	X	226 048	N	X	X	N
3323239Y	Other architectural and ornamental work, nsk .....	N	X	X	25 074	N	X	X	N
3323239YVW	Other architectural and ornamental work, nsk .....	N	X	X	25 074	N	X	X	N
332323W	Ornamental and architectural metal work, nsk, total .....	N	X	X	407 035	N	X	X	N
332323WY	Ornamental and architectural metal work, nsk, total .....	N	X	X	407 035	N	X	X	N
332323WYVW	Ornamental and architectural metal work, nsk for nonadministrative-record establishments .....	N	X	X	232 360	N	X	X	N
332323WYVY	Ornamental and architectural metal work, nsk, for administrative-record establishments .....	N	X	X	174 675	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3323231</b>	<b>METAL GRILLES, REGISTERS, AND AIR DIFFUSERS</b>		
	United States .....	<b>480 428</b>	<b>321 641</b>
	California .....	13 126	N
	Florida .....	58 338	50 172
	Indiana .....	17 336	N
	Missouri .....	12 906	N
	New York .....	3 666	4 325
	Texas .....	68 697	N
<b>3323233</b>	<b>ORNAMENTAL AND ARCHITECTURAL METAL WORK</b>		
	United States .....	<b>1 187 717</b>	<b>N</b>
	Alabama .....	49 026	N
	Arizona .....	19 443	N
	Arkansas .....	5 903	N
	California .....	145 973	N
	Colorado .....	21 578	N
	Connecticut .....	33 329	N
	Delaware .....	8 029	N
	Florida .....	63 066	N
	Georgia .....	24 935	N
	Idaho .....	2 529	N
	Illinois .....	95 708	N
	Indiana .....	23 450	N
	Iowa .....	14 829	N
	Kansas .....	5 048	N
	Kentucky .....	17 417	N
	Louisiana .....	7 271	N
	Maryland .....	36 506	N
	Massachusetts .....	17 259	N
	Michigan .....	17 263	N
	Minnesota .....	17 178	N

See footnotes at end of table.

Table 6b. **Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes.]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3323233</b>	<b>ORNAMENTAL AND ARCHITECTURAL METAL WORK—Con.</b>		
	Mississippi .....	3 834	N
	Missouri .....	24 601	N
	Nevada .....	5 894	N
	New Jersey .....	25 245	N
	New Mexico .....	5 364	N
	New York .....	52 803	N
	North Carolina .....	64 589	N
	North Dakota .....	3 137	N
	Ohio .....	73 718	N
	Oklahoma .....	3 939	N
	Oregon .....	18 733	N
	Pennsylvania .....	92 125	N
	South Carolina .....	18 003	N
	Tennessee .....	20 102	N
	Texas .....	66 091	N
	Utah .....	21 982	N
	Virginia .....	17 683	N
	Washington .....	15 730	N
	Wisconsin .....	15 148	N
<b>3323235</b>	<b>OPEN METAL FLOORING, GRATING, AND STUDS</b>		
	United States .....	<b>496 697</b>	<b>325 454</b>
	California .....	41 118	33 988
	Connecticut .....	4 942	N
	Florida .....	5 982	3 882
	Illinois .....	55 120	36 458
	Indiana .....	7 510	N
	Louisiana .....	3 182	2 207
	Mississippi .....	2 355	N
	Missouri .....	23 602	3 540
	Ohio .....	56 451	32 880
	Oregon .....	9 070	2 198
	Pennsylvania .....	37 349	24 420
	South Carolina .....	2 503	N
	Texas .....	45 963	34 697
	Washington .....	2 443	N
	Wisconsin .....	6 389	N
<b>3323237</b>	<b>METAL SCAFFOLDING AND SHORING AND FORMING FOR CONCRETE WORK</b>		
	United States .....	<b>401 366</b>	<b>241 538</b>
	Alabama .....	13 011	N
	Arkansas .....	6 709	N
	California .....	9 495	9 057
	Illinois .....	52 557	N
	Kansas .....	25 364	N
	Massachusetts .....	18 003	N
	Michigan .....	3 168	2 811
	New York .....	9 545	2 573
	Ohio .....	70 149	33 344
	Pennsylvania .....	21 651	24 231
	Texas .....	32 777	N
	Wisconsin .....	18 926	5 752
<b>3323239</b>	<b>OTHER ARCHITECTURAL AND ORNAMENTAL WORK</b>		
	United States .....	<b>932 933</b>	<b>N</b>
	Alabama .....	15 883	N
	Arizona .....	18 334	N
	Arkansas .....	21 463	N
	California .....	71 769	N
	Colorado .....	6 050	N
	Connecticut .....	8 972	N
	Florida .....	17 620	N
	Georgia .....	31 230	N
	Illinois .....	93 783	N
	Indiana .....	45 049	N
	Iowa .....	23 879	N
	Kansas .....	6 610	N
	Kentucky .....	7 521	N
	Louisiana .....	11 114	N
	Maryland .....	31 265	N
	Massachusetts .....	22 587	N
	Michigan .....	11 995	N
	Minnesota .....	24 578	N
	Missouri .....	20 225	N
	Nebraska .....	29 370	N
	Nevada .....	11 755	N
	New Jersey .....	10 020	N
	New York .....	75 383	N
	North Carolina .....	53 781	N
	Ohio .....	42 799	N
	Oklahoma .....	5 513	N
	Oregon .....	11 831	N
	Pennsylvania .....	38 719	N
	South Dakota .....	8 336	N
	Tennessee .....	9 254	N

See footnotes at end of table.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3323239</b>	<b>OTHER ARCHITECTURAL AND ORNAMENTAL WORK—Con.</b>		
	Texas . . . . .	69 235	N
	Utah . . . . .	5 004	N
	Washington . . . . .	11 649	N
	Wisconsin . . . . .	42 101	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332323</b>	<b>ORNAMENTAL &amp; ARCHITECTURAL METAL WORK MFG</b>				
33272203	Metal bolts, nuts, screws, washers, rivets, and other screw machine products . . . . .	X	39 156	X	N
33200095	Other fabricated metal products (except forgings) . . . . .	X	112 024	X	N
33100035	Castings (rough and semifinished) . . . . .	X	29 674	X	N
33210001	Forgings . . . . .	X	702	X	N
33120007	Steel bars, bar shapes, and plates (except castings, forgings, and fabricated metal products) . . . . .	X	140 943	X	N
33120009	Steel concrete reinforcing bars . . . . .	X	10 527	X	N
33120017	Steel sheet and strip, including tin plate . . . . .	X	256 371	X	N
33120069	Steel structural shapes (except castings, forgings, and fabricated metal products) . . . . .	X	108 728	X	N
33120037	All other steel shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	234 281	X	N
33142111	Copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	D	X	N
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing . . . . .	X	44 926	X	N
33131600	Aluminum and aluminum-base alloy extruded shapes, including extruded rod, bar, pipe, tube, etc. . . . .	X	74 850	X	N
33100007	All other aluminum and aluminum-base alloy shapes and forms, including refinery shapes (except castings and forgings) . . . . .	X	13 464	X	N
33100083	Other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) . . . . .	X	25 315	X	N
00190023	Iron and steel scrap, excluding home scrap . . . . .	X	D	X	N
32551003	Paints, varnishes, lacquers, stains, shellacs, japans, enamels, and allied products . . . . .	X	35 676	X	N
00970099	All other materials and components, parts, containers, and supplies . . . . .	X	148 319	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. . . . .	X	314 774	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.



# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332323 ORNAMENTAL AND ARCHITECTURAL METAL WORK MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing ornamental and architectural metal work, such as staircases, metal open steel flooring, fire escapes, railings, and scaffolding.

The data published with NAICS code 332323 include the following SIC industries:

- 3446 Architectural metal work
- 3449 Miscellaneous metal work (pt)
- 3523 Farm machinery and equipment (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.



In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## **DESCRIPTION OF THE ASM ESTIMATING PROCEDURE**

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.



# Appendix G.

## Comparability of Product Classes and Product Codes:

### 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33211111	34625	34625	3321165281	3469989	3469989	3322127 pt.	37999 pt.	37999 pt.
3321111101	3462511	3462511	3321165291	3469997	3469997	3322127101	3423611	3423611
332111206	3462513	3462513	3321165361	3469971	3469971	3322127111	3423621	3423621
332111311	3462515	3462515	3321165YVW	3469900	3469900	3322127116	3423631	3423631
332111416	3462517	3462517	332116W	34690 pt.	34690 pt.	3322127121	3423641	3423641
332111YVW	3462500	3462500	332116WYVW	3469000 pt.	3469000 pt.	3322127131	3423681	3423681
3321113	34626	34626	332116YVW	3469002 pt.	3469002 pt.	3322127136	3423685	3423685
3321113101	3462611	3462611	3321170 pt.	34990 pt.	34990 pt.	3322127141	3799906	3799923 pt.
3321113106	3462613	3462613	3321170 pt.	34990 pt.	34990 pt.	3322127199	3423698	3423698
3321113111	3462616	3462616	3321170 pt.	34990 pt.	34990 pt.	3322127226	3524101	3524100 pt.
3321113YVW	3462600	3462600	3321170 pt.	34996	34996	3322127YVW pt.	3423600	3423600
3321115	34627	34627	3321170106	3499633	3499633	3322127YVW pt.	3524100 pt.	3524100 pt.
3321115101	3462712	3462712	3321170211	3499655	3499655	3322127YVW pt.	3799900 pt.	3799900 pt.
3321115106	3462716	3462716	3321170321	3499677	3499677	3322129 pt.	35455	35455
3321115YVW	3462700	3462700	3321170401	3499611	3499611	3322129 pt.	35455	35455
3321117	34628	34628	3321170416	3499666	3499666	3322129 pt.	36992 pt.	36992 pt.
3321117101	3462812	3462812	3321170426	3499688	3499688	3322129101	3545511	3545511
3321117106	3462816	3462816	3321170YVW pt.	3499000 pt.	3499000 pt.	3322129106	3545513	3545513
3321117YVW	3462800	3462800	3321170YVW pt.	3499600	3499600	3322129111	3545515	3545515
332111W	34620	34620	3321170YVW pt.	3499002 pt.	3499002 pt.	3322129116	3545517	3545517
332111WYVW	3462000	3462000	3322111 pt.	39141 pt.	39141 pt.	3322129121	3545521	3545521
332111YVW	3462002	3462002	3322111 pt.	39142 pt.	39142 pt.	3322129126	3545561	3545561
3321121	34635	34635	332211101	3421111	3421111	3322129131	3545565	3545565
3321121101	3463521	3463521	3322111103	3914245	3914270 pt.	3322129146	3545577	3545577
3321121206	3463523	3463523	3322111106	3914155	3914170 pt.	3322129161	3699255	3699200 pt.
3321121311	3463525	3463525	3322112111	3421125	3421125	3322129236	3545571	3545571
3321121316	3463529	3463529	332211222	3421130	3421130	3322129341	3545573	3545573
3321121YVW	3463500	3463500	332211326	3421153	3421153	3322129451	3545579	3545579
3321122	34639	34639	332211331	3421155	3421155	3322129YVW pt.	3545500	3545500
3321122101	3463915	3463915	332211336	3421157	3421157	3322129YVW pt.	3699200 pt.	3699200 pt.
3321122106	3463925	3463925	332211344	3421159	3421159	332212W pt.	35230 pt.	35230 pt.
3321122111	3463935	3463935	332211355	3421180	3421180	332212W pt.	35240 pt.	35240 pt.
3321122YVW	3463900	3463900	332211455	3421180	3421180	332212W pt.	35450 pt.	35450 pt.
332112W	34630	34630	332211YVW pt.	3421100	3421100	332212W pt.	36990 pt.	36990 pt.
332112WYVW	3463000	3463000	332211YVW pt.	3914200 pt.	3914200 pt.	332212W pt.	37990 pt.	37990 pt.
332112YVW	3463002	3463002	3322113	34212	34212	332212W pt.	39990 pt.	39990 pt.
3321140 pt.	34490 pt.	34490 pt.	3322113101	3421205	3421205	332212WYVW pt.	3423000	3423000
3321140 pt.	34498	34498	3322113106	3421210	3421210	332212WYVW pt.	3523000 pt.	3523000 pt.
3321140101	3449811	3449811	3322113111	3421216	3421216	332212WYVW pt.	3524000 pt.	3524000 pt.
3321140206	3449813	3449813	3322113YVW	3421200	3421200	332212WYVW pt.	3545000 pt.	3545000 pt.
3321140311	3449815	3449815	332211W pt.	34210	34210	332212WYVW pt.	3699000 pt.	3699000 pt.
3321140416	3449817	3449817	332211W pt.	39140 pt.	39140 pt.	332212WYVW pt.	3799000 pt.	3799000 pt.
3321140YVW pt.	3449000 pt.	3449000 pt.	332211YVW pt.	3421000	3421000	332212WYVW pt.	3999000 pt.	3999000 pt.
3321140YVW pt.	3449800	3449800	332211YVW pt.	3914000 pt.	3914000 pt.	332212WYVW pt.	3423002	3423002
3321140YVW pt.	3449002 pt.	3449002 pt.	332211YVW pt.	3421002	3421002	332212WYVW pt.	3523002 pt.	3523002 pt.
3321150 pt.	34660	34660	332211YVW pt.	3914002 pt.	3914002 pt.	332212WYVW pt.	3524002 pt.	3524002 pt.
3321150 pt.	34661	34661	3322121 pt.	34231	34231	332212WYVW pt.	3545002 pt.	3545002 pt.
3321150 pt.	34662	34662	3322121 pt.	39999 pt.	39999 pt.	332212WYVW pt.	3699002 pt.	3699002 pt.
3321150101	3466105	3466105	3322121101	3423112	3423112	332212WYVW pt.	3799002 pt.	3799002 pt.
3321150103 pt.	3466200 pt.	3466200	3322121206	3423113	3423113	332212WYVW pt.	3999002 pt.	3999002 pt.
3321150103 pt.	3466200 pt.	3466230	3322121311	3423121	3423121	3322130	34250	34250
3321150103 pt.	3466200 pt.	3466230	3322121351	3423141	3423141	3322130101	3425011	3425011
3321150106 pt.	3466123 pt.	3466120	3322121356	3423151	3423151	3322130106	3425013	3425013
3321150106 pt.	3466123 pt.	3466122	3322121361	3423155	3423155	3322130111	3425016	3425016
3321150YVW pt.	3466000	3466000	3322121365	3999971	3999997 pt.	3322130116	3425018	3425018
3321150YVW pt.	3466100	3466100	3322121399	3423197	3423197	3322130122	3425019	3425019
3321150YVW	3466002	3466002	3322121416	3423131	3423131	3322130226	3425031	3425031
3321161	34692	34692	3322121421	3423133	3423133	3322130231	3425035	3425035
3321161101	3469201	3469201	3322121426	3423136	3423136	3322130236	3425036	3425036
3321161115	3469215	3469215	3322121431	3423137	3423137	3322130244	3425039	3425039
3321161205	3469205	3469205	3322121436	3423138	3423138	3322130255	3425041	3425041
3321161311	3469211	3469211	3322121444	3423139	3423139	3322130361	3425043	3425043
3321161331	3469231	3469231	3322121YVW pt.	3423100	3423100	3322130365	3425045	3425045
3321161352	3469252	3469252	3322121YVW pt.	3999900 pt.	3999900 pt.	3322130377	3425049	3425049
3321161354	3469253	3469253	3322123 pt.	34234	34234	3322130YVW	3425000	3425000
3321161388	3469288	3469288	3322123 pt.	3523E pt.	3523E pt.	3322130YVW	3425002	3425002
3321161398	3469298	3469298	3322123101	3423414	3423414	3322141	34694	34694
3321161421	3469220	3469220	3322123106	3423433	3423433	3322141111	3469411	3469411
3321161441	3469241	3469241	3322123111	3423444	3423444	3322141221	3469414	3469414
3321161525	3469225	3469225	3322123121	3423498	3423498	3322141231	3469417	3469417
3321161561	3469261	3469261	3322123216	3523E80	3523E00 pt.	3322141241	3469429	3469429
3321161571	3469271	3469271	3322123YVW pt.	3423400	3423400	3322141YVW	3469400	3469400
3321161584	3469284	3469284	3322123YVW pt.	3523E00 pt.	3523E00 pt.	3322143	34695	34695
3321161YVW	3469200	3469200	3322125	34235	34235	3322143101	3469507	3469507
3321163	34696	34696	3322125101	3423511	3423511	3322143211	3469509	3469509
3321163100	3469600	3469600	3322125206	3423512	3423512	3322143221	3469515	3469515
3321165	34699	34699	3322125311	3423521	3423521	3322143231 pt.	3469525 pt.	3469521
3321165101	3469941	3469941	3322125316	3423522	3423522	3322143231 pt.	3469525 pt.	3469524
3321165211	3469948	3469948	3322125321	3423531	3423531	3322143241 pt.	3469599 pt.	3469527
3321165221	3469951	3469951	3322125333	3423541	3423541	3322143241 pt.	3469599 pt.	3469528
3321165231	3469959	3469959	3322125YVW	3423500	3423500	3322143YVW	3469500	3469500
3321165241	3469961	3469961	3322127 pt.	34236	34236	332214W	34690 pt.	34690 pt.
3321165251	3469969	3469969	3322127 pt.	35241 pt.	35241 pt.	332214WYVW	3469000 pt.	3469000 pt.
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3323113236	3448227	3448227	3323215111 pt	3449779	3449779	3323237116	3446418	3446418
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3323121101 pt	3449443	3449443	3323219	34425	34425	3323239YVW pt	3446500	3446500
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3323121216	3441144	3441144	332321W pt	24990 pt	24990 pt	332323W pt	34490 pt	34490 pt
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3323211222	3442122	3442122	332322C311	3444819	3444819	3324209YVW	3443500	3443500
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332999A116	3499539	3499539						



# Power Boiler and Heat Exchanger Manufacturing

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



## U S C E N S U S B U R E A U

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**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**

Under Secretary for  
Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special



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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332410</b>	<b>Power boiler &amp; heat exchanger mfg</b>	<b>433</b>	<b>466</b>	<b>27 257</b>	<b>936 287</b>	<b>19 458</b>	<b>40 614</b>	<b>574 668</b>	<b>2 041 568</b>	<b>1 796 131</b>	<b>3 812 583</b>	<b>101 746</b>
344320	Fabricated plate work, boiler shops (pt)	N	466	27 257	936 287	19 458	40 614	574 668	2 041 568	1 796 131	3 812 583	101 746

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.  
<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332410, POWER BOILER &amp; HEAT EXCHANGER MFG</b>												
<b>United States</b> .....	-	<b>466</b>	<b>267</b>	<b>27 257</b>	<b>936 287</b>	<b>19 458</b>	<b>40 614</b>	<b>574 668</b>	<b>2 041 568</b>	<b>1 796 131</b>	<b>3 812 583</b>	<b>101 746</b>
Alabama .....	1	11	4	318	10 528	268	493	5 832	27 221	30 155	57 410	1 382
Arkansas .....	-	6	3	392	13 072	307	575	9 190	24 772	19 675	45 927	1 260
California .....	1	39	17	1 334	49 408	940	1 692	29 240	102 059	78 031	178 982	7 758
Florida .....	5	10	4	274	8 139	195	408	5 028	14 176	12 508	26 764	717
Georgia .....	3	10	3	228	7 214	160	368	4 373	14 556	13 008	27 618	715
Illinois .....	-	24	8	636	19 407	451	837	11 293	46 042	25 699	73 194	1 588
Indiana .....	-	7	4	399	12 462	332	664	8 868	24 073	24 110	47 596	1 018
Iowa .....	-	7	5	278	8 656	213	445	5 936	19 062	15 599	34 402	856
Kansas .....	1	8	5	441	11 655	331	661	7 812	27 671	16 464	44 359	2 215
Louisiana .....	-	12	7	674	20 442	530	1 108	13 796	41 909	31 322	72 790	1 470
Massachusetts .....	2	9	2	176	6 943	112	242	3 443	17 008	10 291	27 310	936
Michigan .....	-	10	5	456	14 262	327	675	8 436	24 828	19 015	43 140	994
Minnesota .....	-	13	7	633	24 399	416	858	14 460	61 107	67 644	133 386	1 813
Mississippi .....	-	7	6	1 279	37 399	1 015	1 924	28 246	113 664	68 496	148 060	2 203
Missouri .....	-	9	4	890	36 985	619	1 326	22 491	69 492	56 091	129 151	3 614
New Jersey .....	1	15	7	518	18 445	314	606	9 145	38 709	43 575	81 065	1 746
New York .....	-	34	18	2 784	106 180	1 867	3 924	57 480	223 957	162 782	392 203	8 194
North Carolina .....	1	8	4	359	10 595	281	583	6 968	17 607	31 448	48 688	1 271
Ohio .....	-	17	13	1 051	34 742	657	1 255	18 823	93 620	69 646	163 234	2 633
Oklahoma .....	-	42	35	2 897	104 404	2 162	5 294	70 021	215 393	251 522	463 150	10 741
Pennsylvania .....	-	18	15	1 392	50 973	744	1 308	19 207	80 767	130 879	217 651	4 231
South Carolina .....	-	6	5	469	15 429	352	782	9 435	45 515	23 017	69 398	738
Tennessee .....	-	10	8	892	27 282	695	1 442	18 546	66 947	56 367	122 713	2 411
Texas .....	-	55	37	3 762	121 249	2 824	6 002	83 239	284 816	249 589	532 109	11 482
Washington .....	1	8	3	138	4 594	109	209	2 734	7 813	6 938	14 788	344
Wisconsin .....	-	19	12	1 362	48 888	1 004	2 279	32 270	105 334	67 017	172 421	8 610

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332410, POWER BOILER &amp; HEAT EXCHANGER MFG</b>		<b>332410, POWER BOILER &amp; HEAT EXCHANGER MFG—Con.</b>	
Companies <sup>1</sup> .....	number.. 433	Value added .....	\$1,000.. 2 041 568
All establishments .....	number.. 466	Total inventories, beginning of year .....	\$1,000.. 571 097
Establishments with 1 to 19 employees .....	number.. 199	Finished goods inventories, beginning of year .....	\$1,000.. 84 885
Establishments with 20 to 99 employees .....	number.. 188	Work-in-process inventories, beginning of year .....	\$1,000.. 300 575
Establishments with 100 employees or more .....	number.. 79	Materials and supplies inventories, beginning of year .....	\$1,000.. 185 637
All employees .....	number.. 27 257	Total inventories, end of year .....	\$1,000.. 598 944
Total compensation <sup>2</sup> .....	\$1,000.. 1 169 515	Finished goods inventories, end of year .....	\$1,000.. 88 442
Annual payroll .....	\$1,000.. 936 287	Work-in-process inventories, end of year .....	\$1,000.. 322 134
Total fringe benefits .....	\$1,000.. 233 228	Materials and supplies inventories, end of year .....	\$1,000.. 188 368
Production workers, average for year .....	number.. 19 458	Gross book value of total assets at beginning of year .....	\$1,000.. 1 183 896
Production workers on March 15 .....	number.. 19 409	Total capital expenditures (new and used) .....	\$1,000.. 101 746
Production workers on May 15 .....	number.. 19 487	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 18 450
Production workers on August 15 .....	number.. 19 386	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 83 296
Production workers on November 15 .....	number.. 19 550	Total retirements <sup>2</sup> .....	\$1,000.. 23 669
Production-worker hours .....	1,000.. 40 614	Gross book value of total assets at end of year .....	\$1,000.. 1 261 973
Production-worker wages .....	\$1,000.. 574 668	Total depreciation during year <sup>2</sup> .....	\$1,000.. 74 501
Total cost of materials .....	\$1,000.. 1 796 131	Total rental payments <sup>2</sup> .....	\$1,000.. 25 778
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 1 552 069	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 11 831
Cost of resales .....	\$1,000.. 87 365	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 13 947
Cost of fuels .....	\$1,000.. 13 463	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 10 019
Cost of purchased electricity .....	\$1,000.. 29 099	Response coverage ratio <sup>4</sup> .....	percent.. 82
Cost of contract work .....	\$1,000.. 114 135	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 32 196
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 479 768	Response coverage ratio <sup>4</sup> .....	percent.. 82
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 9 230
Total value of shipments .....	\$1,000.. 3 812 583	Response coverage ratio <sup>4</sup> .....	percent.. 82
Primary products value of shipments .....	\$1,000.. 3 285 616	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 5 863
Secondary products value of shipments .....	\$1,000.. 334 428	Response coverage ratio <sup>4</sup> .....	percent.. 82
Total miscellaneous receipts .....	\$1,000.. 192 539	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 4 612
Value of resales .....	\$1,000.. 155 439	Response coverage ratio <sup>4</sup> .....	percent.. 82
Contract receipts .....	\$1,000.. 9 744	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 10 431
Other miscellaneous receipts .....	\$1,000.. 27 356	Response coverage ratio <sup>4</sup> .....	percent.. 82
Primary products specialization ratio .....	percent.. 90	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 5 779
Value of primary products shipments made in all industries .....	\$1,000.. 3 554 744	Response coverage ratio <sup>4</sup> .....	percent.. 82
Value of primary products shipments made in this industry .....	\$1,000.. 3 285 616	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 2 986
Value of primary products shipments made in other industries .....	\$1,000.. 269 128	Response coverage ratio <sup>4</sup> .....	percent.. 82
Coverage ratio .....	percent.. 92		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332410, POWER BOILER &amp; HEAT EXCHANGER MFG</b>												
<b>All establishments .....</b>	-	<b>466</b>	<b>267</b>	<b>27 257</b>	<b>936 287</b>	<b>19 458</b>	<b>40 614</b>	<b>574 668</b>	<b>2 041 568</b>	<b>1 796 131</b>	<b>3 812 583</b>	<b>101 746</b>
Establishments with 1 to 4 employees .....	8	80	-	161	4 772	120	196	3 048	9 443	8 212	17 801	605
Establishments with 5 to 9 employees .....	5	45	-	321	10 349	235	434	6 513	21 082	17 960	37 673	972
Establishments with 10 to 19 employees .....	3	74	-	1 018	30 457	728	1 310	18 841	66 801	46 335	115 963	2 001
Establishments with 20 to 49 employees .....	2	114	114	3 617	115 744	2 578	5 009	69 798	243 698	218 167	470 201	14 075
Establishments with 50 to 99 employees .....	1	74	74	5 083	164 171	3 749	8 004	101 301	339 419	323 995	661 944	14 745
Establishments with 100 to 249 employees .....	-	61	61	9 166	315 347	6 598	14 141	196 457	727 425	681 957	1 403 266	36 382
Establishments with 250 to 499 employees .....	-	13	13	4 114	156 966	2 730	5 800	89 028	346 185	281 687	625 773	22 915
Establishments with 500 to 999 employees .....	-	4	4	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	60	-	309	7 904	228	348	5 045	14 975	14 096	29 057	780

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332410</b>	<b>Power boiler &amp; heat exchanger mfg .....</b>	<b>466</b>	<b>27 257</b>	<b>936 287</b>	<b>19 458</b>	<b>40 614</b>	<b>574 668</b>	<b>2 041 568</b>	<b>1 796 131</b>	<b>3 812 583</b>	<b>101 746</b>
3324101	Fabricated heat exchangers and steam condensers (except for nuclear applications) .....	152	14 271	516 551	10 144	22 271	312 244	1 188 285	1 056 929	2 240 490	58 629
3324105	Steel power boilers (stationary and marine), parts and attachments (except nuclear applications) .....	45	6 792	234 521	4 717	9 666	145 729	459 432	430 395	874 592	21 912

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332410</b>	<b>Power boilers and heat exchangers</b> .....	<b>N</b>	<b>X</b>	<b>X</b>	<b>3 554 744</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3324101	Fabricated heat exchangers and steam condensers (except for nuclear applications) .....	N	X	X	2 030 890	N	X	X	1 535 751
33241011	Fabricated bar tube industrial heat exchangers, closed types (except for nuclear applications) .....	N	X	X	867 732	N	X	X	N
3324101101	Fabricated bar tube industrial heat exchangers, closed types (except for nuclear applications) .....	130	X	X	867 732	112	X	X	738 405
33241012	Fabricated fin tube industrial heat exchangers, closed types (except for nuclear applications) .....	N	X	X	911 371	N	X	X	N
3324101206	Fabricated fin tube industrial heat exchangers, closed types (except for nuclear applications) .....	88	X	X	911 371	77	X	X	583 506
33241013	Fabricated steam condensers (except for nuclear applications) .....	N	X	X	203 645	N	X	X	N
3324101311	Fabricated steam condensers (except for nuclear applications) .....	32	X	X	203 645	36	X	X	130 708
3324101Y	Fabricated heat exchangers and steam condensers (except for nuclear applications), nsk .....	N	X	X	48 142	N	X	X	N
3324101YWV	Fabricated heat exchangers and steam condensers (except for nuclear applications), nsk .....	N	X	X	48 142	N	X	X	83 132
3324105	Steel power boilers (stationary and marine), parts and attachments (except nuclear applications) .....	N	X	X	778 328	N	X	X	808 261
33241051	Water tube steel, fire tube steam and vertical and other power boilers .....	N	X	X	447 568	N	X	X	N
3324105101	Water tube steel power boilers (stationary and marine), 10,000 lb per hour or less 15 p.s.i. steam working pressure or less (except for nuclear applications) .....	5	X	X	7 743	3	X	X	912
3324105106	Water tube steel power boilers (stationary and marine), more than 15 p.s.i. steam working pressure, 100,000 lb per hour or less, saturated (except for nuclear applications) .....	13	X	X	71 888	N	X	X	N
3324105111	Water tube steel power boilers (stationary and marine), more than 15 p.s.i. steam working pressure, 100,000 lb per hour or less, super heated (except for nuclear applications) .....	9	X	X	94 006	N	X	X	N
3324105126	Water tube steel power boilers (stationary and marine), more than 15 p.s.i. steam working pressure, 100,001 lb per hour or more saturated (except for nuclear applications) .....	7	X	X	40 146	N	X	X	N
3324105131	Water tube steel power boilers (stationary and marine), more than 15 p.s.i. steam working pressure, 100,001 lb per hour or more super heated (except for nuclear applications) .....	8	X	X	93 210	N	X	X	N
3324105146	Other water tube steam power boilers (stationary and marine), including 10,001 lb per hour or more with 15 p.s.i. steam working pressure or less (except for nuclear applications) .....	3	X	X	D	1	X	X	D
3324105151	Fire tube steam power boilers (stationary and marine), horizontal return tubular (except for nuclear applications) .....	8	X	X	8 991	N	X	X	N
3324105161	Fire tube steam power boilers (stationary and marine), firebox, (except for nuclear applications) .....	3	X	X	3 763	N	X	X	N
3324105171	Fire tube steam power boilers (stationary and marine), scotch type pressure (except for nuclear applications) .....	5	X	X	35 126	N	X	X	N
3324105181	Vertical and other fire tube type steam power boilers (stationary and marine) (except for nuclear applications) .....	5	X	X	D	2	X	X	D
3324105186	Other steel power boilers (stationary and marine) (except for nuclear applications) .....	14	X	X	60 594	8	X	X	26 700
33241052	Parts and attachments for steel power boilers (sold separately) (except for nuclear applications) .....	N	X	X	330 760	N	X	X	N
3324105291	Parts and attachments for steel power boilers (sold separately) (except for nuclear applications) .....	28	X	X	330 760	36	X	X	253 505

See footnotes at end of table.

**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332410</b>	<b>Power boilers and heat exchangers—Con.</b>								
3324105	Steel power boilers (stationary and marine), parts and attachments (except nuclear applications)—Con.								
3324105Y	Steel power boilers (stationary and marine), parts and attachments (except nuclear applications), nsk	N	X	X	—	N	X	X	N
3324105YVW	Steel power boilers (stationary and marine), parts and attachments (except nuclear applications), nsk	N	X	X	—	N	X	X	16 073
332410W	Power boilers and heat exchangers, nsk, total	N	X	X	745 526	N	X	X	N
332410WY	Power boilers and heat exchangers, nsk, total	N	X	X	745 526	N	X	X	N
332410WYWW	Power boilers and heat exchangers, nsk, for nonadministrative-record establishments	N	X	X	714 538	N	X	X	N
332410WYWY	Power boilers and heat exchangers, nsk, for administrative-record establishments	N	X	X	30 988	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3324101</b>	<b>FABRICATED HEAT EXCHANGERS AND STEAM CONDENSERS (EXCEPT FOR NUCLEAR APPLICATIONS)</b>		
	<b>United States</b>	<b>2 030 890</b>	<b>1 535 751</b>
	California	46 672	40 183
	Illinois	27 978	N
	Indiana	31 361	N
	Michigan	17 640	8 025
	Minnesota	33 651	N
	Missouri	57 427	N
	New Jersey	60 585	59 529
	New York	321 169	294 185
	Ohio	71 794	40 100
	Oklahoma	425 965	322 627
	Oregon	17 543	10 709
	Pennsylvania	83 378	69 239
	Texas	295 954	213 932
	Virginia	55 782	35 981
	Washington	5 949	N
	Wisconsin	125 643	66 219
<b>3324105</b>	<b>STEEL POWER BOILERS (STATIONARY AND MARINE), PARTS AND ATTACHMENTS (EXCEPT NUCLEAR APPLICATIONS)</b>		
	<b>United States</b>	<b>778 328</b>	<b>808 261</b>
	California	36 932	30 349
	Kansas	35 576	N
	New York	56 633	30 943
	Oklahoma	12 736	20 320
	Pennsylvania	70 272	168 492
	Texas	86 485	110 122

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332410</b>	<b>POWER BOILER &amp; HEAT EXCHANGER MFG</b>				
33290005	Fabricated metal pipe (except castings and forgings) .....	X	93 979	X	N
33291905	Fabricated metal valves and pipe fittings .....	X	23 260	X	N
332000A3	Fabricated metal parts specially designed for steel power boilers, n.e.c. (except castings and forgings) .....	X	31 113	X	N
33200039	All other fabricated metal products (except castings and forgings) .....	X	169 028	X	N
33151001	Iron and steel castings (rough and semifinished) .....	X	35 058	X	N
33152005	Aluminum and aluminum-base alloy castings (rough and semifinished) .....	X	—	X	N
33152003	Other nonferrous castings (rough and semifinished) .....	X	18 444	X	N
33210001	Forgings .....	X	19 808	X	N
33120057	Steel bars and bar shapes (except concrete reinforcing bars, castings, forgings, and fabricated metal products) .....	X	30 407	X	N
33120009	Steel concrete reinforcing bars .....	X	D	X	N
33120017	Steel sheet and strip, including tin plate .....	X	101 599	X	N
33120079	Steel plate .....	X	125 079	X	N
33120041	Wide flange steel structural beams .....	X	11 184	X	N
33120047	All other steel structural shapes (except sheet piling, castings, forgings, and fabricated steel products) .....	X	20 335	X	N
33120039	All other steel shapes and forms (including sheet piling, excluding castings, forgings, and fabricated metal products) .....	X	30 653	X	N
33140003	Nonferrous refinery shapes (except castings, forgings, and fabricated metal products) .....	X	D	X	N
33142135	Copper and copper-base alloy pipe and tube (except castings, forgings, and fabricated metal products) .....	X	61 666	X	N
33142141	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	15 118	X	N
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing .....	X	57 556	X	N
33100055	All other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	38 514	X	N
33100067	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	10 849	X	N
32551003	Paints, varnishes, lacquers, stains, shellacs, japans, enamels, and allied products .....	X	31 660	X	N
33399203	Welding electrodes .....	X	40 407	X	N
00970099	All other materials and components, parts, containers, and supplies .....	X	195 052	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	379 688	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive



stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332410 POWER BOILER AND HEAT EXCHANGER MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing power boilers and heat exchangers. Establishments in this industry may perform installation in addition to manufacturing power boilers and heat exchangers.

The data published with NAICS code 332410 include the following SIC industry:

3443 Fabricated plate work, boiler shops (pt)

This definition comes from the 1997 NAICS Manual. However, for this industry, the 1997 Economic Census – Manufacturing did not fully implement the conversion to NAICS. Data for NAICS industry 332410 do not include establishments primarily engaged in the manufacture of nuclear control drive mechanisms. The NAICS definitions will be fully implemented with the 2002 Economic Census.

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.



The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

## Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.

# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33211111	34625	34625	3321165281	3469989	3469989	3322127 pt.	37999 pt.	37999 pt.
3321111101	3462511	3462511	3321165291	3469997	3469997	3322127101	3423611	3423611
332111206	3462513	3462513	3321165361	3469971	3469971	3322127111	3423621	3423621
332111311	3462515	3462515	3321165YVW	3469900	3469900	3322127116	3423631	3423631
332111416	3462517	3462517				3322127121	3423641	3423641
332111YVW	3462500	3462500	332116W	34690 pt.	34690 pt.	3322127131	3423681	3423681
			332116WYVW	3469000 pt.	3469000 pt.	3322127136	3423685	3423685
3321113	34626	34626	332116WYVW	3469002 pt.	3469002 pt.	3322127141	3799906	3799923 pt.
3321113101	3462611	3462611				3322127199	3423698	3423698
3321113106	3462613	3462613	3321170 pt.	34990 pt.	34990 pt.	3322127226	3524101	3524100 pt.
3321113111	3462616	3462616				3322127YVW pt.	3423600	3423600
3321113YVW	3462600	3462600	3321170 pt.	34996	34996	3322127YVW pt.	3524100 pt.	3524100 pt.
			3321170106	3499633	3499633	3322127YVW pt.	3799900 pt.	3799900 pt.
3321115	34627	34627	3321170211	3499655	3499655			
3321115101	3462712	3462712	3321170321	3499677	3499677			
3321115106	3462716	3462716	3321170401	3499611	3499611			
3321115YVW	3462700	3462700	3321170416	3499666	3499666	3322129 pt.	35455	35455
			3321170426	3499688	3499688	3322129 pt.	36992 pt.	36992 pt.
3321117	34628	34628	3321170YVW pt.	3499000 pt.	3499000 pt.	3322129101	3545511	3545511
3321117101	3462812	3462812	3321170YVW pt.	3499600	3499600	3322129106	3545513	3545513
3321117106	3462816	3462816	3321170YVW	3499002 pt.	3499002 pt.	3322129111	3545515	3545515
3321117YVW	3462800	3462800	3321170YVW	3499002 pt.	3499002 pt.	3322129116	3545517	3545517
						3322129121	3545521	3545521
332111W	34620	34620	3322111 pt.	39141 pt.	39141 pt.	3322129126	3545561	3545561
332111WYVW	3462000	3462000				3322129131	3545565	3545565
332111YVW	3462002	3462002	3322111 pt.	39142 pt.	39142 pt.	3322129146	3545577	3545577
			332211101	3421111	3421111	3322129161	3699255	3699200 pt.
3321121	34635	34635	3322111101	3914245	3914270 pt.	3322129236	3545571	3545571
3321121101	3463521	3463521	3322111103	3914155	3914170 pt.	3322129341	3545573	3545573
3321121206	3463523	3463523	3322111106	3421125	3421130	3322129451	3545579	3545579
3321121311	3463525	3463525	3322111211	3421130	3421130	3322129YVW pt.	3545500	3545500
3321121316	3463529	3463529	3322111222	3421153	3421153	3322129YVW pt.	3699200 pt.	3699200 pt.
3321121YVW	3463500	3463500	3322111326	3421155	3421155			
			3322111331	3421157	3421157	332212W pt.	35230 pt.	35230 pt.
3321122	34639	34639	3322111336	3421159	3421159			
3321122101	3463915	3463915	3322111344	3421180	3421180	332212W pt.	35240 pt.	35240 pt.
3321122106	3463925	3463925	3322111455	3421100	3421100			
3321122111	3463935	3463935	3322111YVW pt.	3914200 pt.	3914200 pt.	332212W pt.	35450 pt.	35450 pt.
3321122YVW	3463900	3463900						
						332212W pt.	36990 pt.	36990 pt.
332112W	34630	34630	3322113	34212	34212			
332112WYVW	3463000	3463000	3322113101	3421205	3421205	332212W pt.	37990 pt.	37990 pt.
332112WYVW	3463002	3463002	3322113106	3421210	3421210			
			3322113111	3421216	3421216			
3321140 pt.	34490	34490	3322113YVW	3421200	3421200			
						332212W pt.	39990 pt.	39990 pt.
3321140101	3449811	3449811	332211W pt.	34210	34210	332212WYVW pt.	3423000	3423000
3321140206	3449813	3449813				332212WYVW pt.	3523000 pt.	3523000 pt.
3321140311	3449815	3449815	332211W pt.	39140 pt.	39140 pt.	332212WYVW pt.	3524000 pt.	3524000 pt.
3321140416	3449817	3449817	332211WYVW pt.	3421000	3421000	332212WYVW pt.	3545000 pt.	3545000 pt.
3321140YVW pt.	3449000 pt.	3449000 pt.	332211WYVW pt.	3914000 pt.	3914000 pt.	332212WYVW pt.	3699000 pt.	3699000 pt.
3321140YVW pt.	3449800	3449800	332211WYVW pt.	3421002	3421002	332212WYVW pt.	3799000 pt.	3799000 pt.
3321140YVW	3449002 pt.	3449002 pt.	332211WYVW pt.	3914002 pt.	3914002 pt.	332212WYVW pt.	3999000 pt.	3999000 pt.
						332212WYVW pt.	3423002	3423002
3321150 pt.	34660	34660	3322121 pt.	34231	34231	332212WYVW pt.	3523002 pt.	3523002 pt.
						332212WYVW pt.	3524002 pt.	3524002 pt.
3321150 pt.	34662	34662	332212121	39999 pt.	39999 pt.	332212WYVW pt.	3545002 pt.	3545002 pt.
3321150101	3466105	3466105	3322121101	3423112	3423112	332212WYVW pt.	3699002 pt.	3699002 pt.
3321150103 pt.	3466200	3466200	3322121206	3423113	3423113	332212WYVW pt.	3799002 pt.	3799002 pt.
3321150103 pt.	3466200 pt.	3466230	3322121311	3423121	3423121			
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3321150106 pt.	3466123 pt.	3466120	3322121356	3423151	3423151	3322130101	3425011	3425011
3321150106 pt.	3466123 pt.	3466122	3322121361	3423155	3423155	3322130106	3425013	3425013
3321150YVW pt.	3466000	3466000	3322121365	3999971	3999999 pt.	3322130111	3425016	3425016
3321150YVW pt.	3466100	3466100	3322121399	3423197	3423197	3322130116	3425018	3425018
3321150YVW	3466002	3466002	3322121416	3423131	3423131	3322130122	3425019	3425019
			3322121421	3423133	3423133	3322130226	3425031	3425031
						3322130231	3425035	3425035
3321161	34692	34692	3322121426	3423136	3423136	3322130236	3425036	3425036
3321161101	3469201	3469201	3322121431	3423137	3423137	3322130244	3425039	3425039
3321161115	3469215	3469215	3322121436	3423138	3423138	3322130255	3425041	3425041
3321161205	3469205	3469205	3322121444	3423139	3423139			
3321161311	3469211	3469211	3322121YVW pt.	3423100	3423100	3322130361	3425043	3425043
3321161331	3469231	3469231	3322121YVW pt.	3999900 pt.	3999900 pt.	3322130365	3425045	3425045
3321161352	3469252	3469252				3322130377	3425049	3425049
3321161354	3469253	3469253	3322123 pt.	34234	34234	3322130YVW	3425000	3425000
3321161388	3469288	3469288				3322130YVW	3425002	3425002
3321161398	3469298	3469298	3322123 pt.	3523E pt.	3523E pt.			
3321161421	3469220	3469220	3322123101	3423414	3423414	3322141	34694	34694
			3322123106	3423433	3423433	3322141111	3469411	3469411
3321161441	3469241	3469241	3322123111	3423444	3423444	3322141221	3469414	3469414
3321161525	3469225	3469225	3322123121	3423498	3423498	3322141231	3469417	3469417
3321161561	3469261	3469261	3322123216	3523E80	3523E00 pt.	3322141241	3469429	3469429
3321161571	3469271	3469271	3322123YVW pt.	3423400	3423400	3322141YVW	3469400	3469400
3321161584	3469284	3469284	3322123YVW pt.	3523E00 pt.	3523E00 pt.			
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						3322143101	3469507	3469507
3321163	34696	34696	3322125101	3423511	3423511	3322143211	3469509	3469509
3321163100	3469600	3469600	3322125206	3423512	3423512	3322143221	3469515	3469515
			3322125311	3423521	3423521	3322143231 pt.	3469525 pt.	3469521
3321165	34699	34699	3322125316	3423522	3423522	3322143231 pt.	3469525 pt.	3469524
3321165101	3469941	3469941	3322125321	3423531	3423531	3322143241 pt.	3469599 pt.	3469527
3321165211	3469948	3469948	3322125333	3423541	3423541	3322143241 pt.	3469599 pt.	3469598
3321165221	3469951	3469951	3322125YVW	3423500	3423500	3322143YVW	3469500	3469500
3321165231	3469959	3469959						
3321165241	3469961	3469961				332214W	34690 pt.	34690 pt.
3321165251	3469969	3469969	3322127 pt.	34236	34236	332214WYVW	3469000 pt.	3469000 pt.
3321165271	3469985	3469985	3322127 pt.	35241 pt.	35241 pt.	332214WYVW	3469002 pt.	3469002 pt.



1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3323111	34481	34481	332312321	3442298	3442298	3323233YVW pt	3446200	3446200
332311106	3448117	3448117	3323213306	3442221	3442221	3323233YVW pt	3449600	3449600
3323111111	3448118	3448118	3323213YVW	3442200	3442200	3323235	34463	34463
332311201	3448115	3448115	3323215 pt	24991 pt	24991 pt	3323235101	3446310	3446310
332311YVW	3448100	3448100	3323215 pt	34423	34423	3323235106	3446312	3446312
3323113	34482	34482	3323215 pt	34497	34497	3323235211	3446320	3446320
3323113101	3448211	3448211	332321501 pt	3442321	3442321	3323235216	3446322	3446322
3323113106	3448214	3448214	332321501 pt	3449773	3449773	3323235YVW	3446300	3446300
3323113111	3448215	3448215	332321506 pt	2499141	2499141	3323237	34464	34464
3323113216	3448216	3448216	332321506 pt	3442325	3442325	3323237101	3446410	3446410
3323113221	3448217	3448217	332321506 pt	3449775	3449775	3323237106	3446413	3446413
3323113226	3448218	3448218	3323215111 pt	3442351	3442351	3323237111	3446416	3446416
3323113231	3448226	3448226	3323215111 pt	3449779	3449779	3323237116	3446418	3446418
3323113236	3448227	3448227	3323215YVW pt	2499100 pt	2499100 pt	3323237YVW	3446400	3446400
3323113241	3448254	3448254	3323215YVW pt	3442300	3442300	3323239 pt	34465	34465
3323113YVW	3448200	3448200	3323215YVW pt	3449700	3449700	3323239 pt	3523E pt	3523E pt
3323114W	34480	34480	3323217	34424	34424	3323239106	3446512	3446512
3323114YVW	3448000	3448000	3323217101	3442411	3442411	3323239111	3446530	3446530
3323114YVW	3448002	3448002	3323217106	3442412	3442412	3323239201	3446510	3446510
3323121 pt	34411	34411	3323217111	3442413	3442413	3323239311	3523E84	3523E00 pt
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3323121101 pt	3441141	3441141	3323219	34425	34425	3323239YVW pt	3523E00 pt	3523E00 pt
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3323121206 pt	3441142	3441142	3323219106	3442512	3442512	332323W pt	34490 pt	34490 pt
3323121206 pt	3449447	3449447	3323219111	3442551	3442551	332323W pt	35230 pt	35230 pt
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3323121211 pt	3449452	3449452	332321W pt	24990 pt	24990 pt	332323WYVW pt	3449000 pt	3449000 pt
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3323121221	3441146	3441146	332321W pt	34490 pt	34490 pt	332323WYVW pt	3446002	3446002
3323121226	3441171	3441171	332321WYVW pt	2499000 pt	2499000 pt	332323WYVW pt	3449002 pt	3449002 pt
3323121231	3441171	3441171	332321WYVW pt	3442000	3442000	332323WYVW pt	3523002 pt	3523002 pt
3323121YVW pt	3441100	3441100	332321WYVW pt	3449000 pt	3449000 pt	3324101	34431	34431
3323121YVW pt	3449400	3449400	332321WYVW pt	2499002 pt	2499002 pt	3324101101	3443113	3443113
3323123	34412	34412	332321WYVW pt	3442002	3442002	3324101206	3443118	3443118
3323123100	3441200	3441200	332321YVW pt	3449002 pt	3449002 pt	3324101311	3443155	3443155
3323125	34413	34413	3323221	34441	34441	3324101YVW	3443100	3443100
3323125106	3441320	3441320	3323221101	3444121	3444121	3324105	34433	34433
3323125111	3441323	3441323	3323221106	3444123	3444123	3324105101	3443308	3443308
3323125116	3441326	3441326	3323221211	3444127	3444127	3324105106 pt	3443331 pt	3443331 pt
3323125121	3441329	3441329	3323221216	3444129	3444129	3324105106 pt	3443331 pt	3443331 pt
3323125126	3441359	3441359	3323221YVW	3444100	3444100	3324105111 pt	3443332 pt	3443332 pt
3323125131	3441384	3441384	3323223	34442	34442	3324105111 pt	3443332 pt	3443332 pt
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3323125201	3441316	3441316	3323223106	3444215	3444215	3324105126 pt	3443333 pt	3443333 pt
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332312W pt	34410	34410	3323223YVW	3444200	3444200	3324105131 pt	3443336 pt	3443336 pt
332312W pt	34490 pt	34490 pt	3323227	34444	34444	3324105146	3443339	3443339
332312WYVW pt	3441000	3441000	3323227101	3444411	3444411	3324105151 pt	3443342 pt	3443342 pt
332312WYVW pt	3449000 pt	3449000 pt	3323227206	3444417	3444417	3324105151 pt	3443342 pt	3443342 pt
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332312WYVW pt	3449002 pt	3449002 pt	3323227216	3444429	3444429	3324105161 pt	3443343 pt	3443343 pt
3323130 pt	34430 pt	34430 pt	3323227216	3444429	3444429	3324105161 pt	3443343 pt	3443343 pt
3323130 pt	34432 pt	34432 pt	3323227221	3444431	3444431	3324105171 pt	3443345 pt	3443345 pt
3323130111	3443244	3443244	3323227YVW	3444400	3444400	3324105171 pt	3443345 pt	3443345 pt
3323130116	3443246	3443246	3323229	34445	34445	3324105181	3443348	3443348
3323130121	3443248	3443248	3323229106	3444516	3444516	3324105186	3443351	3443351
3323130226	3443252	3443252	3323229111	3444517	3444517	3324105291	3443352	3443352
3323130231	3443254	3443254	3323229116	3444518	3444518	3324105YVW	3443300	3443300
3323130236	3443256	3443256	3323229121	3444519	3444519	332410W	34430 pt	34430 pt
3323130301	3443221	3443221	3323229201	3444505	3444505	332410WYVW	3443000 pt	3443000 pt
3323130346	3443299	3443299 pt	3323229YVW	3444500	3444500	332410WYVW	3443002 pt	3443002 pt
3323130406	3443236	3443236	332322A	34447	34447	3324207	34434	34434
3323130YVW pt	3443000 pt	3443000 pt	332322A101	3444721	3444721	3324207101	3443414	3443414
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3323130YVW	3443002 pt	3443002 pt	332322A111	3444731	3444731	3324207YVW	3443400	3443400
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3323211119	3442121	3442121	332322C206	3444813	3444813	3324209YVW	3443500	3443500
3323211201	3442105	3442105	332322C311	3444819	3444819	332420A	34436	34436
3323211204	3442107	3442107	332322CYVW	3444800	3444800	332420A100	3443600	3443600
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3323211222	3442122	3442122	332322E101	3444931	3444931	332420C101	3443712	3443712
3323211225	3442123	3442123	332322E106	3444941	3444941	332420C106	3443715	3443715
3323211328	3442124	3442124	332322E211	3444953	3444953	332420C111	3443717	3443717
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3323211334	3442126	3442126	332322E326	3444962	3444962	332420C121	3443748	3443748
3323211440	3442128	3442128	332322E331	3444965	3444965	332420C126	3443750	3443750
3323211443	3442130	3442130	332322E336	3444998	3444998	332420CYVW	3443700	3443700
3323211446	3442131	3442131	332322EYVW	3444900	3444900	332420E	34438	34438
3323211549	3442132	3442132	332322W	34440 pt	34440 pt	332420E101	3443803	3443803
3323211552	3442134	3442134	332322WYVW	3444000 pt	3444000 pt	332420E106	3443805	3443805
3323211555	3442136	3442136	332322WYVW	3444002 pt	3444002 pt	332420E211	3443808	3443808
3323211661	3442142	3442142	3323231	34461	34461	332420E216	3443813	3443813
3323211664	3442143	3442143	3323231106	3446112	3446112	332420E221	3443820	3443820
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3323211758	3442139	3442139	3323231116	3446117	3446117	332420EYVW	3443800	3443800
3323211770	3442145	3442145	3323231201	3446110	3446110	332420G	34439	34439
3323211837	3442127	3442127	3323231YVW	3446100	3446100	332420G101	3443915	3443915
3323211YVW	3442100	3442100	3323233 pt	34496	34496	332420G106	3443917	3443917
3323213	34422	34422	332323301 pt	3446210	3446210	332420G111	3443919	3443919
3323213101	3442220	3442220	3323233101 pt	3449611	3449611	332420G116	3443923	3443923
3323213111	3442222	3442222	3323233106 pt	3446212	3446212	332420G121	3443931	3443931
3323213116	3442224	3442224	3323233106 pt	3449632	3449632	332420G126	3443932	3443932
3323213121	3442230	3442230	3323233211	3446220	3446220	332420G131	3443933	3443933
3323213126	3442235	3442235	3323233216	3446222	3446222	332420G136	3443934	3443934
3323213231	3442241	3442241	3323233216	3446222	3446222	3324		

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332420W	34430 pt.	34430 pt.	3325107	34297	34297	332618W pt.	33990 pt.	33990 pt.
332420WYVW	3443000 pt.	3443000 pt.	3325107101	3429711	3429711	332618W pt.	34960	34960
332420WYVW	3443002 pt.	3443002 pt.	3325107106	3429731	3429731	332618WYVW pt.	3315000 pt.	3315000 pt.
3324311	34111	34111	3325107111	3429798	3429798	332618WYVW pt.	3399000 pt.	3399000 pt.
3324311101	3411120	3411120	3325107YVW	3429700	3429700	332618WYVW pt.	349600	349600
3324311206	3411191	3411191	3325109	34298	34298	332618WYVW pt.	3315002 pt.	3315002 pt.
3324311YVW	3411100	3411100	3325109101	3429812	3429812	332618WYVW pt.	3399002 pt.	3399002 pt.
3324313	34112	34112	3325109106	3429822	3429822	332618WYVW pt.	3496002	3496002
3324313100	3411200	3411200	3325109111	3429852	3429852	3327100 pt.	35990 pt.	35990 pt.
332431W	34110	34110	3325109121	3429865	3429865	3327100 pt.	35995	35995
332431WYVW	3411000	3411000	3325109199	3429898	3429898	3327100000	3599500	3599500
332431WYVW	3411002	3411002	3325109YVW	3429800 pt.	3429800 pt.	3327100YVW	3599000 pt.	3599000 pt.
3324391 pt.	34121	34121	332510W pt.	34290 pt.	34290 pt.	3327100YVW	3599002 pt.	3599002 pt.
3324391 pt.	34998 pt.	34998 pt.	332510W pt.	34990 pt.	34990 pt.	3327211	34511	34511
3324391100	3412100 pt.	3412100 pt.	332510WYVW pt.	3429000 pt.	3429000 pt.	3327211100	3451100	3451100
3324391306	3499821	3499821	332510WYVW pt.	3499000 pt.	3499000 pt.	3327215	34512	34512
3324391311	3499825	3499825	332510WYVW pt.	3429002 pt.	3429002 pt.	3327215111	3451231	3451231
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3324393	34122	34122	3326111101	3493105	3493105	3327215444	3451257	3451257 pt.
3324393100	3412200	3412200	3326111106	3493106	3493106	3327215555	3451262	3451262
3324395 pt.	34123	34123	3326111216	3493155	3493155	3327215666	3451239	3451239
3324395 pt.	34293	34293	3326111221	3493157	3493157	3327215699	3451298	3451298 pt.
3324395 pt.	34443	34443	3326111311	3493116	3493116	3327215YVW	3451200	3451200
3324395101 pt.	3412313	3412313	3326111326	3493199	3493199	332721W	34510	34510
3324395106 pt.	3444314	3444314	3326111YVW	3493100	3493100	332721WYVW	3451000	3451000
3324395106 pt.	3429300	3429300	3326113	34932	34932	332721WYVW	3451002	3451002
3324395106 pt.	3444324	3444324	3326113101	3493210	3493210	3327221	34527	34527
3324395199	3412319	3412319	3326113106	3493220	3493220	3327221101	3452701	3452701
3324395YVW pt.	3412300	3412300	3326113YVW	3493200	3493200	3327221106	3452706	3452706
3324395YVW pt.	3444300	3444300	332611W	34930	34930	3327221115	3452715	3452715
3324397	35373 pt.	35373 pt.	332611WYVW	3493000	3493000	3327221145	3452745	3452745
3324397100	3537334	3537300 pt.	332611WYVW	3493002	3493002	3327221159	3452759	3452759
332439W pt.	34120	34120	332611YVW	3493000	3493000	3327221172	3452761	3452761
332439W pt.	34290 pt.	34290 pt.	3326122	34952	34952	3327221178	3452762	3452762
332439W pt.	34440 pt.	34440 pt.	332612201	3495212	3495212	3327221184	3452763	3452763
332439W pt.	34990 pt.	34990 pt.	332612206	3495214	3495214	3327221YVW	3452700	3452700
332439W pt.	35370 pt.	35370 pt.	3326122YVW	3495200	3495200	3327223	34524	34524
332439WYVW pt.	3412000	3412000	3326124	34953 pt.	34953 pt.	332722311	3452411	3452411
332439WYVW pt.	3429000 pt.	3429000 pt.	3326124111	3495317	3495317	3327223122	3452412	3452412
332439WYVW pt.	3444000 pt.	3444000 pt.	3326124201	3495311	3495311	3327223133	3452419	3452419
332439WYVW pt.	3499000 pt.	3499000 pt.	3326124216	3495318	3495318	3327223144	3452439	3452439
332439WYVW pt.	3537000 pt.	3537000 pt.	3326124221 pt.	3495320 pt.	3495320 pt.	3327223155	3452445	3452445
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332439WYVW pt.	3499002 pt.	3499002 pt.	3326124YVW	3495300 pt.	3495300 pt.	3327225104	3452504	3452504
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3325101	34292	34292	332612WYVW	3495000 pt.	3495000 pt.	3327225189	3452589	3452589
3325101101	3429212	3429212	332612WYVW	3495002 pt.	3495002 pt.	3327225YVW	3452500	3452500
3325101106	3429213	3429213	3326181	34961	34961	3327227	34526	34526
3325101111	3429214	3429214	3326181101	3496113	3496113	3327227109	3452609	3452609
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3325101121	3429253	3429253	3326181105	3496134	3496134	3327227135	3452635	3452635
3325101133	3429255	3429255	3326181107	3496152	3496152	3327227179	3452679	3452679
3325101YVW	3429200	3429200	3326181YVW	3496100	3496100	3327227YVW	3452600	3452600
3325103 pt.	34294	34294	3326182	33992	33992	3327229	34528	34528
3325103 pt.	34991	34991	3326182101	3399211	3399211	3327229105	3452831	3452831
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3325103111 pt.	3429415 pt.	3429413	3326182YVW	3399200	3399200	3327229135	3452821	3452821
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3325103125	3499117	3499117	3326185	34965	34965	332722W	34520	34520
3325103126	3429418	3429418	3326185100	3496500	3496500	332722WYVW	3452000	3452000
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3325103129	3499141	3499141	3326187101	3496613	3496613	3328110	33980	33980
3325103131	3429419	3429419	3326187103	3496621	3496621	3328110100	3398000 pt.	3398000 pt.
3325103133	3429422	3429422	3326187105	3496635	3496635	3328110YVW	3398000 pt.	3398000 pt.
3325103137	3499199	3499198 pt.	3326187107	3496671	3496671	3328110YVW	3398002	3398002
3325103216	3429416	3429416	3326187YVW	3496600	3496600	3328120	34790 pt.	34790 pt.
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3325103367	3429444	3429444	3326189111 pt.	3315212 pt.	3315210 pt.	3328120221	3479031	3479031
3325103451	3429433	3429433	3326189115	3315221	3315213 pt.	3328120326	3479061	3479061
3325103456	3429436	3429436	3326189117	3315224	3315216 pt.	3328120431	3479073	3479073
3325103569	3429452	3429452	3326189119	3315226	3315222 pt.	3328120536	3479075	3479075
3325103571	3429453	3429453	3326189121	3315231	3315225 pt.	3328120YVW	3479000 pt.	3479000 pt.
3325103573	3429454	3429454	3326189YVW	3315200 pt.	3315230 pt.	3328120YVW	3479002 pt.	3479002 pt.
3325103575	3429461	3429461	332618B	34968	34968	3328130	34710	34710
3325103579	3429462	3429462	332618B105	3496855	3496855	3328130100	3471000 pt.	3471000 pt.
3325103581	3429464	3429464	332618B217	3496883	3496883	3328130YVW	3471000 pt.	3471000 pt.
3325103583	3429466	3429466	332618B319	3496885	3496885	3328130YVW	3471002	3471002
3325103685	3429471	3429471	332618B401	3496882	3496882	3329111	34911	34911
3325103687	3429473	3429473	332618B403	3496851	3496851	3329111101	3491111	3491111
3325103689	3429481	3429481	332618B407	3496863	3496863	3329111103	3491121	3491121
3325103691	3429491	3429491	332618B409	3496871	3496871	3329111105	3491123	3491123
3325103699	3429498	3429498	332618B411	3496873	3496873	3329111107	3491134	3491134
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332911305	3491221	3491221	332912N	3492N	3492N	332919WYVVV pt	3429000 pt	3429000 pt
3329113107	3491223	3491223	332912N100	3492N00	3492N00	332919WYVVV pt	3494000 pt	3494000 pt
3329113109	3491231	3491231	332912W pt	34920	34920	332919WYVVV pt	3499000 pt	3499000 pt
3329113111	3491235	3491235	332912WYVVV pt	37280 pt	37280 pt	332919WYVVV pt	3429002 pt	3429002 pt
3329113113	3491241	3491241	332912WYVVV pt	3492000	3492000	332919WYVVV pt	3494002 pt	3494002 pt
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3329115105	3491335	3491335	3329131211	3432108	3432108	3329913000	3562200	3562200
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3329115109	3491359	3491359	3329131321	3432112	3432112	3329915000	3562300	3562300
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3329117107	3491417	3491417	3329131451	3432122	3432122	332991WYVVV	3562002	3562002
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3329119209	3491561	3491561	3329133146	3432233	3432233	3329931101	3483111	3483111
3329119YVV	3491500	3491500	3329133151	3432236	3432236	3329931106	3483135	3483135
332911B	34916	34916	3329133201 pt	3432202 pt	3432202 pt	3329931111	3483151	3483151
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332911B103	3491623	3491623	3329133206 pt	3432206 pt	3432206 pt	3329931121	3483181	3483181
332911B105	3491631	3491631	3329133211	3432212	3432212	3329931YVV	3483100	3483100
332911B107	3491633	3491633	3329133216	3432215	3432215	3329933	34833	34833
332911B109	3491641	3491641	3329133221	3432218	3432218	3329933101	3483311	3483311
332911B111	3491653	3491653	3329133226	3432221	3432221	3329933206	3483331	3483331
332911B113	3491665	3491665	3329133256	3432239	3432239	3329933YVV	3483300	3483300
332911B115	3491678	3491678	3329133261	3432245	3432245	332993W	34830	34830
332911B117	3491698	3491698	3329133266	3432250	3432250	332993WYVVV	3483000	3483000
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332911D103	3491713	3491713	3329137106	3432305	3432305	3329943	34842	34842
332911D105	3491715	3491715	3329137111	3432311	3432311	3329943101	3484211	3484211
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332911F	34918	34918	3329137141 pt	3432331 pt	3432331 pt	3329943431	3484254	3484254
332911F100	3491800	3491800	3329137141 pt	3432331 pt	3432331 pt	3329943536	3484265	3484265
332911H	34919	34919	3329137224	3432324	3432324	3329943541	3484274	3484274
332911H100	3491900	3491900	3329137226	3432326	3432326	3329943546	3484281	3484281
332911W	34910	34910	3329137YVV	3432300 pt	3432300 pt	3329943YVV	3484200	3484200
332911WYVV	3491000	3491000	332913W	34320 pt	34320 pt	332994W	34840	34840
332911WYVV	3491002	3491002	332913WYVV	3432000 pt	3432000 pt	332994WYVVV	3484000	3484000
3329121 pt	3492A	3492A	332913WYVV	3432002 pt	3432002 pt	332994WYVV	3484002	3484002
3329121 pt	37284 pt	37284 pt	3329191 pt	34944	34944	3329951	34891	34891
3329121100 pt	3492A00	3492A00	3329191101 pt	34998 pt	34998 pt	3329951106	3489121	3489121
3329121100 pt	3728400 pt	3728400 pt	3329191101 pt	3494421	3494421	3329951111	3489151	3489151
3329121100 pt	3728401 pt	3728401 pt	33291911203	3494431	3494431	3329951116	3489171	3489171
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3329123 pt	3492B	3492B	3329191207	3494451	3494451	3329952	34892	34892
3329123 pt	37284 pt	37284 pt	3329191209	3494499	3494499	3329952100	3489200	3489200
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3329123100 pt	3728402 pt	3728402 pt	3329193 pt	34298 pt	34298 pt	332995WYVV	3489002	3489002
3329123100 pt	3728485 pt	3728485 pt	3329193101	34945 pt	34945 pt	3329961	33534	33534
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3329125	3492C	3492C	3329193105	3494512	3494512	3329963	34980	34980
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3329129	3492E	3492E	3329193113	3494517	3494517	3329963207	3498019	3498019
3329129100	3492E00	3492E00	3329193115	3494518	3494518	3329963YVV	3498000 pt	3498000 pt
332912B	3492F	3492F	3329193215	3494519	3494519	332996W	33530 pt	33530 pt
332912B100	3492F00	3492F00	3329193217	3494521	3494521	332996WYVVV pt	3353000 pt	3353000 pt
332912D	3492G	3492G	3329193319	3494523	3494523	332996WYVVV pt	3498000 pt	3498000 pt
332912D100	3492G00	3492G00	3329193321	3494523	3494523	332996WYVVV pt	3353002 pt	3353002 pt
332912F pt	3492H	3492H	3329193323	3494534	3494534	332996WYVVV pt	3498002	3498002
332912F pt	37284 pt	37284 pt	3329193325	3494537	3494537	3329970	35430	35430
332912F100 pt	3492H00	3492H00	3329193327	3494542	3494542	3329970101	3543011	3543011
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332912F100 pt	3728403 pt	3728403 pt	3329193331	3494547	3494547	3329970YVV	3543000	3543000
332912F100 pt	3728407 pt	3728407 pt	3329193333	3494585	3494585	3329970YVV	3543002	3543002
332912F100 pt	3728483 pt	3728483 pt	3329193335	3494599	3494599	3329980	34310	34310
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3329991106	3497133	3497133	332999G pt	34323 pt	34323 pt	332999W pt	34320 pt	34320 pt
3329991111	3497137	3497137	332999G pt	34945 pt	34945 pt	332999W pt	34940 pt	34940 pt
3329991YWV	3497100	3497100	332999G pt	34998 pt	34998 pt	332999W pt	34970 pt	34970 pt
3329993	34973	34973	332999G pt	35373 pt	35373 pt	332999W pt	34990 pt	34990 pt
3329993101	3497352	3497352	332999G pt	39999 pt	39999 pt	332999W pt	35370 pt	35370 pt
3329993106	3497354	3497354	332999G101	3499811	3499811	332999W pt	35990 pt	35990 pt
3329993111	3497358	3497358	332999G106	3499819	3499819	332999W pt	39990 pt	39990 pt
3329993YWV	3497300	3497300	332999G189	3494571	3494571	332999WYWWW pt...	3291000 pt	3291000 pt
3329994	35994 pt	35994 pt	332999G301	3499829	3499829	332999WYWWW pt...	3432000 pt	3432000 pt
3329994101	3599411	3599411	332999G303	3499839	3499839	332999WYWWW pt...	3494000 pt	3494000 pt
3329994106	3599413	3599413	332999G305	3537331	3537331	332999WYWWW pt...	3497000 pt	3497000 pt
3329994111	3599415	3599415	332999G306 pt	3999991 pt	3999913 pt	332999WYWWW pt...	3499000 pt	3499000 pt
3329994116	3599416	3599416	332999G306 pt	3999991 pt	3999942 pt	332999WYWWW pt...	3499000 pt	3499000 pt
3329994121	3599425	3599425	332999G306 pt	3999991 pt	3999944 pt	332999WYWWW pt...	3537000 pt	3537000 pt
3329994YWV	3599400 pt	3599400 pt	332999G306 pt	3999991 pt	3999999 pt	332999WYWWW pt...	3599000 pt	3599000 pt
3329997	34992	34992	332999G313	3291831	3291831	332999WYWWW pt...	3999000 pt	3999000 pt
3329997101	3499211	3499211	332999G316	3291835	3291890 pt	332999WYWWW pt...	3291002 pt	3291002 pt
3329997106	3499213	3499213	332999G399 pt	3432329	3432332 pt	332999WYWWW pt...	3432002 pt	3432002 pt
3329997YWV	3499200	3499200	332999G399 pt	3499898	3499899 pt	332999WYWWW pt...	3494002 pt	3494002 pt
3329999	34993	34993	332999GYWV pt...	3291800 pt	3291800 pt	332999WYWWW pt...	3497002 pt	3497002 pt
3329999100	3499300	3499300	332999GYWV pt...	3432300 pt	3432300 pt	332999WYWWW pt...	3499002 pt	3499002 pt
332999A	34995	34995	332999GYWV pt...	3494500 pt	3494500 pt	332999WYWWW pt...	3537002 pt	3537002 pt
332999A101	3499511	3499511	332999GYWV pt...	3499800 pt	3499800 pt	332999WYWWW pt...	3599002 pt	3599002 pt
332999A106	3499521	3499521	332999GYWV pt...	3537300 pt	3537300 pt	332999WYWWW pt...	3999002 pt	3999002 pt
332999A111	3499531	3499531						
332999A116	3499539	3499539						



# Metal Tank (Heavy Gauge) Manufacturing

1997

Issued August 1999

EC97M-3324B

## 1997 Economic Census

*Manufacturing*

Industry Series



U S C E N S U S B U R E A U

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## 1997 Economic Census

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Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director





**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special

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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.



**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332420</b>	<b>Metal tank (heavy gauge) mfg . . .</b>	<b>552</b>	<b>613</b>	<b>33 650</b>	<b>1 132 767</b>	<b>24 159</b>	<b>49 332</b>	<b>699 758</b>	<b>2 402 906</b>	<b>2 356 116</b>	<b>4 755 365</b>	<b>120 653</b>
344330	Fabricated plate work, boiler shops (pt) . . . . .	N	613	33 650	1 132 767	24 159	49 332	699 758	2 402 906	2 356 116	4 755 365	120 653

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.  
<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332420, METAL TANK (HEAVY GAUGE) MFG</b>												
<b>United States . . . . .</b>	-	<b>613</b>	<b>394</b>	<b>33 650</b>	<b>1 132 767</b>	<b>24 159</b>	<b>49 332</b>	<b>699 758</b>	<b>2 402 906</b>	<b>2 356 116</b>	<b>4 755 365</b>	<b>120 653</b>
Alabama . . . . .	-	19	14	1 614	51 900	1 145	2 438	34 837	125 326	112 028	236 408	4 835
Arkansas . . . . .	-	8	5	420	10 611	331	607	6 510	26 183	25 410	51 451	883
California . . . . .	-	55	32	2 928	97 465	1 759	3 749	52 941	203 412	187 283	385 759	14 074
Florida . . . . .	-	17	9	448	13 931	364	766	9 410	28 054	29 241	57 127	766
Georgia . . . . .	-	19	11	1 310	40 395	950	2 090	27 835	91 953	112 010	202 459	6 946
Idaho . . . . .	1	6	4	211	6 797	169	310	4 355	7 949	7 966	15 926	286
Illinois . . . . .	-	23	10	730	28 162	514	1 092	16 211	54 938	46 464	102 305	1 608
Indiana . . . . .	-	23	12	1 154	35 278	907	1 803	24 630	70 846	63 412	135 306	2 490
Iowa . . . . .	-	8	6	478	13 443	301	613	9 396	84 640	52 620	136 870	1 323
Kansas . . . . .	-	10	7	803	27 972	460	890	13 182	50 040	59 864	109 944	3 986
Kentucky . . . . .	-	11	9	678	20 290	417	827	9 806	51 505	53 707	105 282	2 770
Louisiana . . . . .	-	15	8	573	18 714	454	1 022	12 435	47 693	21 157	68 709	1 522
Massachusetts . . . . .	-	6	2	130	4 474	103	198	2 162	10 436	16 041	26 816	493
Michigan . . . . .	1	11	6	353	11 593	268	556	7 735	30 022	18 735	48 553	875
Minnesota . . . . .	-	14	7	1 442	49 056	1 142	2 617	36 610	83 240	129 609	214 841	10 173
Mississippi . . . . .	-	6	4	487	15 810	340	748	9 551	29 377	37 869	68 043	1 882
Missouri . . . . .	-	16	13	1 455	48 691	986	1 952	26 571	73 587	64 323	136 719	7 386
New Hampshire . . . . .	1	4	3	198	8 119	152	228	4 736	23 655	15 358	36 927	702
New Jersey . . . . .	-	13	9	478	21 135	307	641	10 632	24 848	30 893	59 970	1 025
New York . . . . .	-	22	13	1 123	42 765	772	1 564	24 808	107 777	40 021	149 681	3 558
North Carolina . . . . .	-	20	12	583	17 858	448	859	10 489	45 573	43 382	89 479	1 106
Ohio . . . . .	-	28	17	2 947	101 958	2 335	4 432	69 694	189 831	191 552	385 553	6 468
Oklahoma . . . . .	-	19	14	871	25 907	686	1 414	18 432	56 631	49 615	107 632	2 075
Oregon . . . . .	-	8	4	290	10 555	221	451	6 404	12 682	19 152	33 012	760
Pennsylvania . . . . .	-	36	29	2 079	76 575	1 422	2 859	43 943	179 644	139 547	315 918	6 204
South Carolina . . . . .	-	6	5	249	8 447	188	351	5 713	13 816	12 532	25 850	2 373
Tennessee . . . . .	-	15	12	1 026	32 120	853	1 722	24 636	88 074	102 581	190 760	2 967
Texas . . . . .	-	79	56	3 550	116 032	2 631	5 666	76 547	232 140	352 602	576 823	12 389
Utah . . . . .	-	7	5	506	18 530	362	858	13 161	35 304	57 679	96 843	1 470
Washington . . . . .	-	12	6	243	8 349	153	293	4 855	13 824	13 377	26 770	1 238
Wisconsin . . . . .	-	25	21	1 806	54 405	1 352	2 789	36 414	103 201	86 641	188 493	6 163

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 11-20 to 29 percent; 21-30 to 39 percent; 31-40 to 49 percent; 41-50 to 59 percent; 51-60 to 69 percent; 61-70 to 79 percent; 71-80 to 89 percent; 81-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332420, METAL TANK (HEAVY GAUGE) MFG</b>		<b>332420, METAL TANK (HEAVY GAUGE) MFG— Con.</b>	
Companies <sup>1</sup> .....	number.. 552	Value added .....	\$1,000.. 2 402 906
All establishments .....	number.. 613	Total inventories, beginning of year .....	\$1,000.. 623 091
Establishments with 1 to 19 employees .....	number.. 219	Finished goods inventories, beginning of year .....	\$1,000.. 104 391
Establishments with 20 to 99 employees .....	number.. 305	Work-in-process inventories, beginning of year .....	\$1,000.. 254 562
Establishments with 100 employees or more .....	number.. 89	Materials and supplies inventories, beginning of year .....	\$1,000.. 264 138
All employees .....	number.. 33 650	Total inventories, end of year .....	\$1,000.. 633 866
Total compensation <sup>2</sup> .....	\$1,000.. 1 404 379	Finished goods inventories, end of year .....	\$1,000.. 120 542
Annual payroll .....	\$1,000.. 1 132 767	Work-in-process inventories, end of year .....	\$1,000.. 242 068
Total fringe benefits .....	\$1,000.. 271 612	Materials and supplies inventories, end of year .....	\$1,000.. 271 256
Production workers, average for year .....	number.. 24 159	Gross book value of total assets at beginning of year .....	\$1,000.. 1 323 720
Production workers on March 15 .....	number.. 23 814	Total capital expenditures (new and used) .....	\$1,000.. 120 653
Production workers on May 15 .....	number.. 24 163	Capital expenditures for buildings and other structures (new and used) .....	\$1,000.. 27 746
Production workers on August 15 .....	number.. 24 466	Capital expenditures for machinery and equipment (new and used) .....	\$1,000.. 92 907
Production workers on November 15 .....	number.. 24 193	Total retirements <sup>2</sup> .....	\$1,000.. 31 390
Production-worker hours .....	\$1,000.. 49 332	Gross book value of total assets at end of year .....	\$1,000.. 1 412 983
Production-worker wages .....	\$1,000.. 699 758	Total depreciation during year <sup>2</sup> .....	\$1,000.. 97 731
Total cost of materials .....	\$1,000.. 2 356 116	Total rental payments <sup>2</sup> .....	\$1,000.. 50 242
Cost of materials, parts, containers, etc., consumed .....	\$1,000.. 2 080 585	Buildings and other structures rental payments <sup>2</sup> .....	\$1,000.. 22 865
Cost of resales .....	\$1,000.. 74 371	Machinery and equipment rental payments <sup>2</sup> .....	\$1,000.. 27 377
Cost of fuels .....	\$1,000.. 22 553	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$1,000.. 8 340
Cost of purchased electricity .....	\$1,000.. 41 181	Response coverage ratio <sup>4</sup> .....	percent.. 76
Cost of contract work .....	\$1,000.. 137 426	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$1,000.. 43 329
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 668 149	Response coverage ratio <sup>4</sup> .....	percent.. 76
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. —	Cost of purchased communications services <sup>3</sup> .....	\$1,000.. 8 908
Total value of shipments .....	\$1,000.. 4 755 365	Response coverage ratio <sup>4</sup> .....	percent.. 76
Primary products value of shipments .....	\$1,000.. 4 178 682	Cost of purchased legal services <sup>3</sup> .....	\$1,000.. 9 025
Secondary products value of shipments .....	\$1,000.. 391 077	Response coverage ratio <sup>4</sup> .....	percent.. 76
Total miscellaneous receipts .....	\$1,000.. 185 606	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$1,000.. 5 065
Value of resales .....	\$1,000.. 102 642	Response coverage ratio <sup>4</sup> .....	percent.. 76
Contract receipts .....	\$1,000.. 9 960	Cost of purchased advertising services <sup>3</sup> .....	\$1,000.. 7 492
Other miscellaneous receipts .....	\$1,000.. 73 004	Response coverage ratio <sup>4</sup> .....	percent.. 76
Primary products specialization ratio .....	percent.. 91	Cost of purchased software and other data processing services <sup>3</sup> .....	\$1,000.. 3 933
Value of primary products shipments made in all industries .....	\$1,000.. 4 544 046	Response coverage ratio <sup>4</sup> .....	percent.. 76
Value of primary products shipments made in this industry .....	\$1,000.. 4 178 682	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$1,000.. 3 669
Value of primary products shipments made in other industries .....	\$1,000.. 365 364	Response coverage ratio <sup>4</sup> .....	percent.. 76
Coverage ratio .....	percent.. 91		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332420. METAL TANK (HEAVY GAUGE) MFG</b>												
<b>All establishments .....</b>	-	<b>613</b>	<b>394</b>	<b>33 650</b>	<b>1 132 767</b>	<b>24 159</b>	<b>49 332</b>	<b>699 758</b>	<b>2 402 906</b>	<b>2 356 116</b>	<b>4 755 365</b>	<b>120 653</b>
Establishments with 1 to 4 employees .....	6	62	-	132	3 801	96	168	2 438	8 828	8 070	16 989	722
Establishments with 5 to 9 employees .....	4	54	-	373	11 642	265	464	6 853	24 523	21 157	46 223	947
Establishments with 10 to 19 employees .....	2	103	-	1 426	43 916	1 016	1 902	25 883	80 954	66 124	146 649	3 352
Establishments with 20 to 49 employees .....	-	213	213	6 705	208 233	4 911	10 033	129 111	428 885	371 747	799 585	20 224
Establishments with 50 to 99 employees .....	-	92	92	6 635	226 283	4 823	9 820	137 174	444 930	537 618	984 012	22 329
Establishments with 100 to 249 employees .....	-	71	71	11 047	364 012	8 125	17 198	239 453	918 895	860 459	1 771 938	38 101
Establishments with 250 to 499 employees .....	-	14	14	4 618	171 264	2 892	5 913	89 033	365 552	321 116	680 408	19 382
Establishments with 500 to 999 employees .....	-	4	4	2 714	103 616	2 031	3 834	69 813	130 339	169 825	309 561	15 596
Establishments with 1,000 to 2,499 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	81	-	409	10 565	302	466	6 741	20 014	18 840	38 840	1 044

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332420</b>	<b>Metal tank (heavy gauge) mfg .....</b>	<b>613</b>	<b>33 650</b>	<b>1 132 767</b>	<b>24 159</b>	<b>49 332</b>	<b>699 758</b>	<b>2 402 906</b>	<b>2 356 116</b>	<b>4 755 365</b>	<b>120 653</b>
3324207	Gas cylinders .....	16	2 317	83 592	1 867	4 097	56 837	247 811	199 345	442 106	11 896
3324209	Metal tanks, complete at factory (standard line pressure) .....	56	5 988	191 908	4 456	8 902	130 277	421 600	566 647	989 222	27 242
332420A	Nuclear reactor steam supply systems, heat exchangers and condensers, pressurizers, components, and auxiliary equipment .....	5	1 386	69 039	695	1 387	22 700	134 616	75 140	209 055	3 197
332420C	Metal tanks, complete at factory (standard line nonpressure) .....	92	3 690	118 338	2 690	5 708	71 563	241 467	187 057	426 895	9 025
332420E	Metal tanks and vessels, custom fabricated at the factory .....	216	11 707	398 521	8 430	17 431	246 660	779 805	753 120	1 521 924	38 166
332420G	Metal tanks and vessels, custom fabricated and field erected .....	95	7 251	236 311	5 067	10 259	149 655	511 166	511 870	1 037 198	27 660

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332420</b>	<b>Metal tanks (heavy gauge) . . . . .</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>4 544 046</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3324207	Gas cylinders . . . . .	N	X	X	498 719	N	X	X	355 470
33242071	Seamless gas cylinders, ferrous and nonferrous . . . . .	N	X	X	498 719	N	X	X	N
3324207101	Seamless ferrous and nonferrous gas cylinders . . . . .	13	X	X	259 533	12	X	X	191 486
3324207106	Welded ferrous and nonferrous gas cylinders . . . . .	16	X	X	239 186	15	X	X	162 476
3324207Y	Gas cylinders, nsk . . . . .	N	X	X	—	N	X	X	N
3324207YVV	Gas cylinders, nsk . . . . .	N	X	X	—	N	X	X	1 508
3324209	Metal tanks, complete at factory (standard line pressure) . . . . .	N	X	X	909 511	N	X	X	496 192
33242091	Metal tanks, complete at factory (standard line pressure) . . . . .	N	X	X	909 511	N	X	X	N
3324209101	Liquefied petroleum gas tanks (all types), ferrous and nonferrous metal, complete at factory (standard line pressure) . . . . .	20	X	X	287 748	18	X	X	107 102
3324209106	Air receivers (tanks), ferrous and nonferrous metal, complete at factory (standard line pressure) . . . . .	20	X	X	163 374	19	X	X	74 617
3324209111	Other pressure tanks (including anhydrous ammonia tanks) ferrous and nonferrous metal, complete at factory (standard line pressure) . . . . .	70	X	X	458 389	59	X	X	270 537
3324209Y	Metal tanks, complete at factory (standard line pressure), nsk . . . . .	N	X	X	—	N	X	X	N
3324209YVV	Metal tanks, complete at factory (standard line pressure), nsk . . . . .	N	X	X	—	N	X	X	43 936
332420A	Nuclear reactor steam supply systems, heat exchangers and condensers, pressurizers, components, and auxiliary equipment . . . . .	N	X	X	224 848	N	X	X	239 685
332420A1	Nuclear reactor steam supply systems, heat exchangers and condensers, pressurizers, components, and auxiliary equipment . . . . .	N	X	X	224 848	N	X	X	N
332420A100	Nuclear reactor steam supply systems, heat exchangers and condensers, pressurizers, components, and auxiliary equipment . . . . .	14	X	X	224 848	18	X	X	239 685
332420C	Metal tanks, complete at factory (standard line nonpressure) . . . . .	N	X	X	441 893	N	X	X	466 422
332420C1	Ferrous and nonferrous metal storage tanks, (standard line nonpressure) . . . . .	N	X	X	441 352	N	X	X	N
332420C101	Ferrous metal storage tanks, complete at factory (standard line nonpressure), 4,000 gal capacity or less . . . . .	83	X	X	159 701	82	X	X	141 833
332420C106	Nonferrous metal storage tanks, complete at factory (standard line nonpressure), 4,000 gal capacity or less . . . . .	29	X	X	20 626	22	X	X	29 822
332420C111	Ferrous metal storage tanks, complete at factory (standard line nonpressure), more than 4,000 gal capacity . . . . .	84	X	X	129 355	76	X	X	103 971
332420C116	Nonferrous metal storage tanks, complete at factory (standard line nonpressure), more than 4,000 gal capacity . . . . .	25	X	X	28 328	27	X	X	21 925
332420C121	Other ferrous metal nonpressure storage tanks, complete at factory (including tanks for trailers, metal septic tanks, etc.) . . . . .	52	X	X	68 241	35	X	X	119 522
332420C126	Other nonferrous metal nonpressure storage tanks, complete at factory (including tanks for trailers, metal septic tanks, etc.) . . . . .	19	X	X	35 101	14	X	X	11 859
332420CY	Metal tanks, complete at factory (standard line nonpressure), nsk . . . . .	N	X	X	541	N	X	X	N
332420CYVV	Metal tanks, complete at factory (standard line nonpressure), nsk . . . . .	N	X	X	541	N	X	X	37 490
332420E	Metal tanks and vessels, custom fabricated at the factory . . . . .	N	X	X	1 409 023	N	X	X	1 085 233
332420E1	Ferrous metal pressure tanks and vessels (more than 24 inch outside diameter and not less than 5 cu ft capacity) . . . . .	N	X	X	612 745	N	X	X	N
332420E101	Ferrous metal pressure tanks and vessels (more than 24 inch outside diameter and not less than 5 cu ft capacity), custom fabricated at the factory, for refineries, chemical plants, and paper mills . . . . .	115	X	X	319 006	134	X	X	335 577
332420E106	Ferrous metal pressure tanks and vessels (more than 24 inch outside diameter and not less than 5 cu ft capacity), custom fabricated at the factory, for other processing industries . . . . .	97	X	X	293 739	80	X	X	208 446

See footnotes at end of table.

**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332420</b>	<b>Metal tanks (heavy gauge)—Con.</b>								
332420E	Metal tanks and vessels, custom fabricated at the factory—Con.								
332420E2	All other metal tanks and vessels, custom fabricated at the factory	N	X	X	784 324	N	X	X	N
332420E211	Nonferrous metal process pressure vessels, tanks, and kettles for refineries, chemical plants, paper mills (more than 24 inch o.d. and not less than 5 cu ft cap.), custom fabricated at the factory	53	X	X	123 733	53	X	X	76 151
332420E216	Liquefied petroleum gas tanks, ferrous and nonferrous, custom fabricated at the factory	14	X	X	29 204	9	X	X	45 777
332420E221	All other ferrous metal tanks and vessels, custom fabricated at the factory	143	X	X	461 238	138	X	X	282 137
332420E226	All other nonferrous metal tanks and vessels, custom fabricated at the factory	56	X	X	170 149	54	X	X	94 122
332420EY	Metal tanks and vessels, custom fabricated at the factory, nsk	N	X	X	11 954	N	X	X	N
332420EYWV	Metal tanks and vessels, custom fabricated at the factory, nsk	N	X	X	11 954	N	X	X	43 023
332420G	Metal tanks and vessels, custom fabricated and field erected	N	X	X	926 399	N	X	X	757 939
332420G1	Ferrous and nonferrous metal bulk storage tanks, custom fabricated and field erected, ground storage	N	X	X	547 980	N	X	X	N
332420G101	Ferrous metal bulk storage tanks, custom fabricated and field erected, elevated type, for dry materials	16	X	X	23 563	23	X	X	23 980
332420G106	Ferrous metal bulk storage tanks, custom fabricated and field erected, elevated type, for water	12	X	X	173 674	15	X	X	139 409
332420G111	Ferrous metal bulk storage tanks, custom fabricated and field erected, elevated type, for other liquids	15	X	X	84 643	19	X	X	50 159
332420G116	Nonferrous metal bulk storage tanks, custom fabricated and field erected, elevated type	7	X	X	12 376	1	X	X	168
332420G121	Ferrous metal bulk storage tanks, custom fabricated and field erected, ground storage type, for dry materials	13	X	X	31 437	8	X	X	15 336
332420G126	Ferrous metal bulk storage tanks, custom fabricated and field erected, ground storage type, for petroleum products	25	X	X	94 583	27	X	X	117 976
332420G131	Ferrous metal bulk storage tanks, custom fabricated and field erected, ground storage type, for water	23	X	X	71 450	28	X	X	69 301
332420G136	Ferrous metal bulk storage tanks, custom fabricated and field erected, ground storage type, for other materials	14	X	X	41 349	14	X	X	43 526
332420G141	Nonferrous metal bulk storage tanks, custom fabricated and field erected, ground storage type	11	X	X	14 905	6	X	X	1 329
332420G2	Ferrous metal pressure vessels and tanks (including gas holders and process vessels, etc.), custom fabricated and field erected, for refineries, chemical plants, and paper mills	N	X	X	133 607	N	X	X	N
332420G246	Ferrous metal pressure vessels and tanks (including gas holders and process vessels, etc.), custom fabricated and field erected, for refineries, chemical plants, and paper mills	22	X	X	133 607	45	X	X	147 405
332420G3	Ferrous and nonferrous metal pressure vessels and tanks	N	X	X	238 897	N	X	X	N
332420G351	Ferrous metal pressure vessels and tanks (including gas holders and process vessels, etc.), custom fabricated and field erected, for other processing industries	26	X	X	148 622	31	X	X	95 716
332420G356	Nonferrous metal pressure vessels and tanks (including gas holders and process vessels, etc.), custom fabricated and field erected	17	X	X	90 275	13	X	X	38 061
332420GY	Metal tanks and vessels, custom fabricated and field erected, nsk	N	X	X	5 915	N	X	X	N
332420GYWV	Metal tanks and vessels, custom fabricated and field erected, nsk	N	X	X	5 915	N	X	X	15 573

See footnotes at end of table.

**Table 6a. Products Statistics: 1997 and 1992—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332420</b>	<b>Metal tanks (heavy gauge)—Con.</b>								
332420W	Metal tanks (heavy gauge), nsk, total	N	X	X	133 653	N	X	X	N
332420WY	Metal tanks (heavy gauge), nsk, total	N	X	X	133 653	N	X	X	N
332420WYWW	Metal tanks (heavy gauge), nsk, for nonadministrative-record establishments	N	X	X	96 243	N	X	X	N
332420WYWY	Metal tanks (heavy gauge), nsk, for administrative-record establishments	N	X	X	37 410	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3324207</b>	<b>GAS CYLINDERS</b>		
	United States	<b>498 719</b>	<b>355 470</b>
<b>3324209</b>	<b>METAL TANKS, COMPLETE AT FACTORY (STANDARD LINE PRESSURE)</b>		
	United States	<b>909 511</b>	<b>496 192</b>
	California	41 503	20 075
	Georgia	60 212	27 178
	Illinois	3 633	N
	Indiana	55 672	34 781
	Kansas	2 302	N
	Missouri	49 222	N
	New York	33 220	N
	Ohio	69 490	N
	Pennsylvania	23 115	10 505
	Texas	53 355	28 505
	West Virginia	4 216	N
	Wisconsin	76 646	28 853
<b>332420A</b>	<b>NUCLEAR REACTOR STEAM SUPPLY SYSTEMS, HEAT EXCHANGERS AND CONDENSERS, PRESSURIZERS, COMPONENTS, AND AUXILIARY EQUIPMENT</b>		
	United States	<b>224 848</b>	<b>239 685</b>
<b>332420C</b>	<b>METAL TANKS, COMPLETE AT FACTORY (STANDARD LINE NONPRESSURE)</b>		
	United States	<b>441 893</b>	<b>466 422</b>
	Alabama	15 718	18 691
	Alaska	7 576	N
	Arizona	5 437	N
	California	39 191	40 907
	Florida	23 801	11 939
	Idaho	7 654	N
	Illinois	28 900	36 743
	Louisiana	4 976	4 873
	Maine	6 125	N
	Michigan	33 280	31 148
	Minnesota	14 529	25 290
	Missouri	24 276	36 451
	New Jersey	9 598	9 711
	New Mexico	3 932	N
	New York	10 520	12 300
	North Carolina	12 207	3 529
	Ohio	14 151	N
	Oklahoma	3 794	N
	Oregon	3 421	N
	Pennsylvania	27 301	15 480
	Texas	22 820	15 074
	Washington	4 304	3 355
	Wisconsin	32 788	24 672

See footnotes at end of table.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>332420E</b>	<b>METAL TANKS AND VESSELS, CUSTOM FABRICATED AT THE FACTORY</b>		
	<b>United States</b> .....	<b>1 409 023</b>	<b>1 085 233</b>
	Alabama .....	43 580	29 080
	California .....	108 563	82 791
	Florida .....	20 321	18 067
	Georgia .....	18 602	10 648
	Illinois .....	38 135	24 509
	Indiana .....	38 994	53 745
	Iowa .....	16 304	N
	Kansas .....	42 139	28 813
	Kentucky .....	11 921	13 223
	Louisiana .....	50 307	71 701
	Michigan .....	10 557	6 757
	Minnesota .....	59 140	35 646
	Mississippi .....	41 710	28 271
	Missouri .....	56 885	63 473
	New Jersey .....	25 456	20 314
	New York .....	59 373	46 622
	North Carolina .....	18 496	12 308
	Ohio .....	22 301	17 577
	Oklahoma .....	42 075	18 955
	Oregon .....	12 404	6 942
	Pennsylvania .....	115 144	80 177
	South Carolina .....	9 818	8 326
	Tennessee .....	84 408	47 020
	Texas .....	287 805	222 702
	Utah .....	30 503	N
	Washington .....	11 188	17 647
	Wisconsin .....	45 805	36 872
<b>332420G</b>	<b>METAL TANKS AND VESSELS, CUSTOM FABRICATED AND FIELD ERRECTED</b>		
	<b>United States</b> .....	<b>926 399</b>	<b>757 939</b>
	Alabama .....	45 237	39 370
	Arkansas .....	3 261	N
	California .....	90 116	54 643
	Florida .....	8 680	N
	Georgia .....	74 847	61 803
	Illinois .....	2 399	N
	Indiana .....	18 456	13 823
	Kansas .....	41 842	N
	Massachusetts .....	5 280	N
	Minnesota .....	24 659	N
	New York .....	6 025	4 571
	Oklahoma .....	19 120	12 561
	Pennsylvania .....	98 516	60 702
	South Carolina .....	17 738	N
	Tennessee .....	15 769	N
	Texas .....	101 286	89 344
	Utah .....	55 795	N
	Wisconsin .....	18 579	5 671

# Additional information is available for this item; see Appendix F.  
 @ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.  
 \$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332420</b>	<b>METAL TANK (HEAVY GAUGE) MFG</b>				
33290005	Fabricated metal pipe (except castings and forgings) .....	X	108 598	X	N
33291905	Fabricated metal valves and pipe fittings .....	X	152 286	X	N
332000A3	Fabricated metal parts specially designed for steel power boilers, n.e.c. (except castings and forgings) .....	X	16 867	X	N
33200039	All other fabricated metal products (except castings and forgings) .....	X	168 417	X	N
33151001	Iron and steel castings (rough and semifinished) .....	X	18 040	X	N
33152005	Aluminum and aluminum-base alloy castings (rough and semifinished) .....	X	—	X	N
33152003	Other nonferrous castings (rough and semifinished) .....	X	2 997	X	N
33210001	Forgings .....	X	51 113	X	N
33120057	Steel bars and bar shapes (except concrete reinforcing bars, castings, forgings, and fabricated metal products) .....	X	56 227	X	N
33120009	Steel concrete reinforcing bars .....	X	798	X	N
33120017	Steel sheet and strip, including tin plate .....	X	346 728	X	N
33120079	Steel plate .....	—	263 939	X	N
33120041	Wide flange steel structural beams .....	X	15 050	X	N
33120047	All other steel structural shapes (except sheet piling, castings, forgings, and fabricated steel products) .....	X	44 220	X	N
33120039	All other steel shapes and forms (including sheet piling, excluding castings, forgings, and fabricated metal products) .....	X	203 193	X	N

See footnotes at end of table.

**Table 7. Materials Consumed by Kind: 1997 and 1992—Con.**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332420</b>	<b>METAL TANK (HEAVY GAUGE) MFG—Con.</b>				
33140003	Nonferrous refinery shapes (except castings, forgings, and fabricated metal products) .....	X	D	X	N
33142135	Copper and copper-base alloy pipe and tube (except castings, forgings, and fabricated metal products) .....	X	D	X	N
33142141	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	2 353	X	N
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing .....	X	28 711	X	N
33100055	All other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	35 031	X	N
33100067	All other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	15 748	X	N
32551003	Paints, varnishes, lacquers, stains, shellacs, japans, enamels, and allied products .....	X	60 516	X	N
33399203	Welding electrodes .....	X	28 975	X	N
00970099	All other materials and components, parts, containers, and supplies .....	X	310 536	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	129 096	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.



# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332420 METAL TANK (HEAVY GAUGE) MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in cutting, forming, and joining heavy gauge metal to manufacture tanks, vessels, and other containers.

The data published with NAICS code 332420 include the following SIC industry:

3443 Fabricated plate work, boiler shops (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.



In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.



# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33211111	34625	34625	3321165281	3469989	3469989	3322127 pt.	37999 pt.	37999 pt.
3321111101	3462511	3462511	3321165291	3469997	3469997	3322127101	3423611	3423611
332111206	3462513	3462513	3321165361	3469971	3469971	3322127111	3423621	3423621
332111311	3462515	3462515	3321165YVV	3469900	3469900	3322127116	3423631	3423631
332111416	3462517	3462517	3321166W	34690 pt.	34690 pt.	3322127121	3423641	3423641
332111YVV	3462500	3462500	3321166YVV	3469000 pt.	3469000 pt.	3322127131	3423681	3423681
3321113	34626	34626	3321166YVV	3469002 pt.	3469002 pt.	3322127136	3423685	3423685
3321113101	3462611	3462611	3321170 pt.	34990 pt.	34990 pt.	3322127141	3799906	3799923 pt.
3321113106	3462613	3462613	3321170 pt.	34990 pt.	34990 pt.	3322127199	3423698	3423698
3321113111	3462616	3462616	3321170 pt.	34990 pt.	34990 pt.	3322127226	3524101	3524100 pt.
3321113YVV	3462600	3462600	3321170 pt.	34996	34996	3322127YVV pt.	3423600	3423600
3321115	34627	34627	3321170106	3499633	3499633	3322127YVV pt.	3524100 pt.	3524100 pt.
3321115101	3462712	3462712	3321170211	3499655	3499655	3322127YVV pt.	3799900 pt.	3799900 pt.
3321115106	3462716	3462716	3321170321	3499677	3499677	3322129 pt.	35455	35455
3321115YVV	3462700	3462700	3321170401	3499611	3499611	3322129 pt.	36992 pt.	36992 pt.
3321117	34628	34628	3321170416	3499666	3499666	3322129101	3545511	3545511
3321117101	3462812	3462812	3321170426	3499688	3499688	3322129106	3545513	3545513
3321117106	3462816	3462816	3321170YVV pt.	3499000 pt.	3499000 pt.	3322129111	3545515	3545515
3321117YVV	3462800	3462800	3321170YVV pt.	3499600	3499600	3322129116	3545517	3545517
332111W	34620	34620	3321170YVV	3499002 pt.	3499002 pt.	3322129121	3545521	3545521
332111YVV	3462000	3462000	3322111 pt.	39141 pt.	39141 pt.	3322129126	3545561	3545561
332111YVV	3462002	3462002	3322111 pt.	39142 pt.	39142 pt.	3322129131	3545565	3545565
3321121	34635	34635	332211101	3421111	3421111	3322129146	3545577	3545577
3321121101	3463521	3463521	3322111103	3914245	3914270 pt.	3322129236	3699255	3699200 pt.
3321121206	3463523	3463523	3322111106	3914155	3914170 pt.	3322129341	3545573	3545573
3321121311	3463525	3463525	3322112111	3421125	3421125	3322129451	3545579	3545579
3321121316	3463529	3463529	332211222	3421130	3421130	3322129YVV pt.	3545500	3545500
3321121YVV	3463500	3463500	3322112326	3421153	3421153	3322129YVV pt.	3699200 pt.	3699200 pt.
3321122	34639	34639	332211331	3421155	3421155	332212W pt.	34230	34230
3321122101	3463915	3463915	332211336	3421157	3421157	332212W pt.	35230 pt.	35230 pt.
3321122106	3463925	3463925	332211344	3421159	3421159	332212W pt.	35240 pt.	35240 pt.
3321122111	3463935	3463935	332211355	3421180	3421180	332212W pt.	35450 pt.	35450 pt.
3321122YVV	3463900	3463900	332211YVV pt.	3421100	3421100	332212W pt.	36990 pt.	36990 pt.
332112W	34630	34630	332211YVV	3914200 pt.	3914200 pt.	332212W pt.	37990 pt.	37990 pt.
332112WYVV	3463000	3463000	3322113	34212	34212	332212W pt.	3990 pt.	3990 pt.
332112WYVV	3463002	3463002	3322113101	3421205	3421205	332212WYVV pt.	3423000	3423000
3321140 pt.	34490 pt.	34490 pt.	3322113106	3421210	3421210	332212WYVV pt.	3523000 pt.	3523000 pt.
3321140 pt.	34498	34498	3322113111	3421216	3421216	332212WYVV pt.	3524000 pt.	3524000 pt.
3321140101	3449811	3449811	3322113YVV	3421200	3421200	332212WYVV pt.	3545000 pt.	3545000 pt.
3321140206	3449813	3449813	332211W pt.	34210	34210	332212WYVV pt.	3699000 pt.	3699000 pt.
3321140311	3449815	3449815	332211W pt.	39140 pt.	39140 pt.	332212WYVV pt.	3799000 pt.	3799000 pt.
3321140416	3449817	3449817	332211WYVV pt.	3421000	3421000	332212WYVV pt.	3999000 pt.	3999000 pt.
3321140YVV pt.	3449800 pt.	3449800 pt.	332211YVV pt.	3914000 pt.	3914000 pt.	332212WYVV pt.	3423002	3423002
3321140YVV pt.	3449800	3449800	332211YVV pt.	3421002	3421002	332212WYVV pt.	3523002 pt.	3523002 pt.
3321140YVV	3449002 pt.	3449002 pt.	332211YVV pt.	3914002 pt.	3914002 pt.	332212WYVV pt.	3524002 pt.	3524002 pt.
3321150 pt.	34660	34660	3322121 pt.	34231	34231	332212WYVV pt.	3545002 pt.	3545002 pt.
3321150 pt.	34661	34661	3322121 pt.	39999 pt.	39999 pt.	332212WYVV pt.	3699002 pt.	3699002 pt.
3321150101	3466105	3466105	3322121101	3423112	3423112	332212WYVV pt.	3799002 pt.	3799002 pt.
3321150103 pt.	3466200 pt.	3466200	3322121206	3423113	3423113	332212WYVV pt.	3999002 pt.	3999002 pt.
3321150103 pt.	3466200 pt.	3466230	3322121311	3423121	3423121	3322130	34250	34250
3321150103 pt.	3466200 pt.	3466232	3322121351	3423141	3423141	3322130101	3425011	3425011
3321150106 pt.	3466123 pt.	3466120	3322121356	3423151	3423151	3322130106	3425013	3425013
3321150106 pt.	3466123 pt.	3466122	3322121361	3423155	3423155	3322130111	3425016	3425016
3321150YVV pt.	3466000	3466000	3322121365	3999971	3999999 pt.	3322130116	3425018	3425018
3321150YVV pt.	3466100	3466100	3322121399	3423197	3423197	3322130122	3425019	3425019
3321150YVV	3466002	3466002	3322121416	3423131	3423131	3322130226	3425031	3425031
3321161	34692	34692	3322121421	3423133	3423133	3322130231	3425035	3425035
3321161101	3469201	3469201	3322121426	3423136	3423136	3322130236	3425036	3425036
3321161115	3469215	3469215	3322121431	3423137	3423137	3322130244	3425039	3425039
3321161205	3469205	3469205	3322121436	3423138	3423138	3322130255	3425041	3425041
3321161311	3469211	3469211	3322121444	3423139	3423139	3322130361	3425043	3425043
3321161331	3469231	3469231	3322121YVV pt.	3423100	3423100	3322130365	3425045	3425045
3321161352	3469252	3469252	3322121YVV pt.	3999900 pt.	3999900 pt.	3322130377	3425049	3425049
3321161354	3469253	3469253	3322123 pt.	34234	34234	3322130YVV	3425000	3425000
3321161388	3469288	3469288	3322123 pt.	3523E pt.	3523E pt.	3322130YVV	3425002	3425002
3321161398	3469298	3469298	3322123101	3423414	3423414	3322141	34694	34694
3321161421	3469220	3469220	3322123106	3423433	3423433	3322141111	3469411	3469411
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3321161525	3469225	3469225	3322123121	3423498	3423498	3322141231	3469417	3469417
3321161561	3469261	3469261	3322123216	3523E80	3523E00 pt.	3322141241	3469429	3469429
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3321165	34699	34699	3322125311	3423521	3423521	3322143231 pt.	3469525 pt.	3469521
3321165101	3469941	3469941	3322125316	3423522	3423522	3322143231 pt.	3469525 pt.	3469524
3321165211	3469948	3469948	3322125321	3423531	3423531	3322143241 pt.	3469599 pt.	3469527
3321165221	3469951	3469951	3322125333	3423541	3423541	3322143241 pt.	3469599 pt.	3469598
3321165231	3469959	3469959	3322125YVV	3423500	3423500	3322143YVV	3469500	3469500
3321165241	3469961	3469961	3322127 pt.	34236	34236	332214W	34690 pt.	34690 pt.
3321165251	3469969	3469969	3322127 pt.	35241 pt.	35241 pt.	332214WYVV	3469000 pt.	3469000 pt.
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						3323239 pt	34465	34465
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3323121206 pt	3449447	3449447	3323219111	3442551	3442551			
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			3323227211	3444423	3444423			
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			3323227221	3444431	3444431			
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3323130406	3443236	3443236						
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3323211334	3442126	3442126	332322E321	3444955	3444955			
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3323211443	3442130	3442130	332322E331	3444965	3444965			
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3323213116	3442224	3442224	3323233101 pt	3449611	3449611			
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3323213236	3442242	3442242	3323233216	3446222	3446222			
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3325103137 .....	3499199 .....	3499198 pt .....	3326189 .....	33152 pt .....	33152 pt .....	33281120 .....	34790 pt .....	34790 pt .....
3325103216 .....	3429416 .....	3429416 .....	3326189101 .....	3315202 .....	3315202 pt .....	3328120101 .....	3479010 .....	3479010 .....
3325103336 .....	3429423 .....	3429423 .....	3326189103 .....	3315204 .....	3315203 pt .....	3328120106 .....	3479011 .....	3479011 .....
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3325103363 .....	3429442 .....	3429442 .....	3326189107 .....	3315212 pt .....	3315210 pt .....	3328120146 .....	3479077 .....	3479077 .....
3325103365 .....	3429443 .....	3429443 .....	3326189111 pt .....	3315212 pt .....	3315213 pt .....	3328120221 .....	3479031 .....	3479031 .....
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3325103456 .....	3429436 .....	3429436 .....	3326189117 .....	3315224 .....	3315223 pt .....	3328120536 .....	3479075 .....	3479075 .....
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3325103573 .....	3429454 .....	3429454 .....	3326189YWV .....	3315200 pt .....	3315200 pt .....	3328130 .....	34710 .....	34710 .....
3325103575 .....	3429461 .....	3429461 .....	332618B .....	34968 .....	34968 .....	3328130100 .....	3471000 pt .....	3471000 pt .....
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3325103583 .....	3429466 .....	3429466 .....	332618B319 .....	3496885 .....	3496885 .....	3329111 .....	34911 .....	34911 .....
3325103685 .....	3429471 .....	3429471 .....	332618B401 .....	3496842 .....	3496842 .....	3329111101 .....	3491111 .....	3491111 .....
3325103687 .....	3429473 .....	3429473 .....	332618B403 .....	3496851 .....	3496851 .....	3329111103 .....	3491121 .....	3491121 .....
3325103689 .....	3429481 .....	3429481 .....	332618B407 .....	3496863 .....	3496863 .....	3329111105 .....	3491123 .....	3491123 .....
3325103691 .....	3429491 .....	3429491 .....	332618B409 .....	3496871 .....	3496871 .....	3329111107 .....	3491134 .....	3491134 .....
3325103699 .....	3429498 .....	3429498 .....	332618B411 .....	3496873 .....	3496873 .....	3329111109 .....	3491138 .....	3491138 .....
3325103699 .....	3429498 .....	3429498 .....	332618B413 .....	3496875 .....	3496875 .....	3329111111 .....	3491143 .....	3491143 .....
3325103YWV pt .....	3429400 .....	3429400 .....	3326					

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3329113	34912	34912	332912L	3492M	3492M	332919W pt	34940 pt	34940 pt
332911301	3491201	3491201	332912L100	3492M00	3492M00	332919W pt	34990 pt	34990 pt
332911303	3491211	3491211				332919WYVWV pt	3429000 pt	3429000 pt
332911305	3491221	3491221	332912N	3492N	3492N	332919WYVWV pt	3494000 pt	3494000 pt
332911307	3491223	3491223	332912N100	3492N00	3492N00	332919WYVWV pt	3499000 pt	3499000 pt
332911309	3491231	3491231	332912W pt	34920	34920	332919WYVWV pt	3429002 pt	3429002 pt
332911311	3491235	3491235				332919WYVWV pt	3494002 pt	3494002 pt
332911313	3491241	3491241	332912WYVWV pt	37280 pt	37280 pt	332919WYVWV pt	3499002 pt	3499002 pt
3329113215	3491243	3491243	332912WYVWV pt	3492000	3492000			
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			332912WYVWV pt	3492002	3492002			
3329115	34913	34913	332912WYVWV pt	3728002 pt	3728002 pt			
332911501	3491311	3491311				3329911	35621	35621
332911503	3491323	3491323	3329131	34321	34321	3329911000	3562100	3562100
332911505	3491335	3491335	3329131101	3432102	3432102			
332911507	3491347	3491347	3329131206	3432105	3432105	3329913	35622	35622
332911509	3491359	3491359	3329131211	3432108	3432108	3329913000	3562200	3562200
3329115211	3491361	3491361	3329131316	3432110	3432110			
3329115YVW	3491300	3491300	3329131321	3432112	3432112	3329915	35623	35623
			3329131326 pt	3432111 pt	3432111 pt	3329915000	3562300	3562300
3329117	34914	34914	3329131326 pt	3432111 pt	3432111 pt			
332911701	3491411	3491411	3329131431	3432115	3432115	3329917	35624	35624
332911703	3491413	3491413	3329131436	3432117	3432117	3329917000	3562400	3562400
332911705	3491415	3491415	3329131441	3432118	3432118			
332911707	3491417	3491417				3329919	35629	35629
332911709	3491421	3491421	3329131446	3432120	3432120	3329919000	3562900	3562900
332911711	3491423	3491423	3329131451	3432122	3432122			
332911713	3491425	3491425	3329131456	3432125	3432125	3329919	35629	35629
332911715	3491431	3491431	3329131461	3432128	3432128			
3329117217	3491461	3491461	3329131466	3432130	3432130	332991W	35620	35620
3329117YVW	3491400	3491400	3329131468 pt	3432133 pt	3432133 pt	332991WYVWV	3562000	3562000
			3329131468 pt	3432133 pt	3432133 pt	332991WYVWV	3562002	3562002
3329119	34915	34915	3329131468 pt	3432133 pt	3432133 pt			
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332911903	3491523	3491523	3329131YVW	3432100	3432100	3329920101	3482025	3482025
332911905	3491535	3491535				3329920206	3482035	3482035
332911907	3491547	3491547	3329133	34322	34322	3329920206	3482045	3482045
332911909	3491561	3491561	3329133131	3432224	3432224	3329920206	3482055	3482055
3329119YVW	3491500	3491500	3329133136	3432227	3432227	3329920216	3482061	3482061
			3329133146	3432230	3432230	3329920251	3482069	3482069
332911B	34916	34916	3329133151	3432233	3432233	3329920626	3482098	3482098
332911B01	3491611	3491611	3329133201 pt	3432236	3432236	3329920731	3482000	3482000
332911B03	3491623	3491623	3329133201 pt	3432202 pt	3432201	3329920YVW	3482002	3482002
332911B05	3491631	3491631	3329133201 pt	3432202 pt	3432201			
332911B07	3491633	3491633	3329133206 pt	3432206 pt	3432205	3329931	34831	34831
332911B09	3491641	3491641	3329133206 pt	3432206 pt	3432207	3329931101	3483111	3483111
332911B11	3491653	3491653	3329133211	3432212	3432212	3329931106	3483135	3483135
332911B13	3491665	3491665				3329931111	3483151	3483151
332911B15	3491678	3491678	3329133216	3432215	3432215	3329931116	3483171	3483171
332911B17	3491698	3491698	3329133221	3432218	3432218	3329931121	3483181	3483181
332911BYVW	3491600	3491600	3329133226	3432221	3432221	3329931YVW	3483100	3483100
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332911D	34917	34917	3329133261	3432245	3432245	3329933	34833	34833
332911D01	3491711	3491711	3329133266	3432250	3432250	3329933101	3483311	3483311
332911D03	3491713	3491713	3329133YVW	3432200	3432200	3329933206	3483331	3483331
332911D05	3491715	3491715				3329933YVW	3483300	3483300
332911D07	3491717	3491717	3329137	34323	34323 pt			
332911D09	3491727	3491727	3329137101	3432302	3432302	332993WYVW	34830	34830
332911D109	3491731	3491731	3329137106	3432305	3432305	332993WYVW	3483000	3483000
332911D111	3491739	3491739	3329137111	3432311	3432311			
332911D213	3491798	3491798	3329137116 pt	3432315 pt	3432314	3329941	34841	34841
332911DYVW	3491700	3491700	3329137116 pt	3432315 pt	3432314	3329941100	3484100	3484100
			3329137121 pt	3432321 pt	3432317			
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332911F100	3491800	3491800	3329137131	3432327	3432327	3329943101	3484211	3484211
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332911H	34919	34919	3329137141 pt	3432331 pt	3432332 pt	3329943311	3484216	3484216
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			3329137226	3432326	3432325 pt	3329943421	3484223	3484223
332911W	34910	34910	3329137YVW	3432300 pt	3432300 pt	3329943426	3484226	3484226
332911WYVW	3491000	3491000				3329943431	3484254	3484254
332911WYVW	3491002	3491002				3329943536	3484265	3484265
			332913W	34320 pt	34320 pt	3329943541	3484274	3484274
3329121 pt	3492A	3492A	332913WYVW	3432000 pt	3432000 pt	3329943546	3484281	3484281
3329121 pt	37284 pt	37284 pt	332913WYVW	3432002 pt	3432002 pt	3329943YVW	3484200	3484200
3329121100 pt	3492A00	3492A00						
3329121100 pt	3728400 pt	3728400 pt	3329191 pt	34944	34944	332994W	34840	34840
3329121100 pt	3728403 pt	3728473 pt	3329191 pt	34998 pt	34998 pt	332994WYVW	3484000	3484000
3329121100 pt	3728401 pt	3728475 pt	3329191101 pt	3494421	3494421	332994WYVW	3484002	3484002
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3329123 pt	3492B	3492B	3329191203	3494431	3494431	3329951	34891	34891
3329123 pt	37284 pt	37284 pt	3329191205	3494441	3494441	3329951106	3489121	3489121
3329123100 pt	3492B00	3492B00	3329191207	3494451	3494451	3329951111	3489151	3489151
3329123100 pt	3728400 pt	3728400 pt	3329191209	3494499	3494499	3329951116	3489171	3489171
3329123100 pt	3728402 pt	3728483 pt	3329191YVW pt	3494400	3494400	3329951YVW	3489100	3489100
3329123100 pt	3728402 pt	3728485 pt	3329191YVW pt	3499800 pt	3499800 pt			
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3329125	3492C	3492C	3329193 pt	34298 pt	34298 pt	3329952100	3489200	3489200
3329125100	3492C00	3492C00						
3329127	3492D	3492D	3329193 pt	34945 pt	34945 pt			
3329127100	3492D00	3492D00	3329193101	3494511	3494511	3329963	34980	34980
			3329193103	3494512	3494512	3329963101	3498013	3498013
3329129	3492E	3492E	3329193105	3494513	3494513	3329963203	3498015	3498015
3329129100	3492E00	3492E00	3329193107	3494514	3494514	3329963205	3498017	3498017
			3329193109	3494515	3494515	3329963207	3498019	3498019
332912B	3492F	3492F	3329193111	3494516	3494516	3329963YVW	3498000 pt	3498000 pt
332912B100	3492F00	3492F00	3329193113	3494517	3494517			
			3329193115	3494518	3494518			
332912D	3492G	3492G	3329193215	3494518	3494518			
332912D100	3492G00	3492G00	3329193217	3494519	3494519	332996W	33530 pt	33530 pt
			3329193319	3494521	3494521	332996WYVWV pt	3353000 pt	3353000 pt
332912F pt	3492H	3492H				332996WYVWV pt	3498000 pt	3498000 pt
332912F pt	37284 pt	37284 pt	3329193321	3494523	3494523	332996WYVWV pt	3353002 pt	3353002 pt
332912F100 pt	3492H00	3492H00	3329193323	3494534	3494534	332996WYVWV pt	3498002	3498002
332912F100 pt	3728400 pt	3728400 pt	3329193325	3494534	3494534			
332912F100 pt	3728403 pt	3728473 pt	3329193327	3494537	3494537	3329970	35430	35430
332912F100 pt	3728403 pt	3728475 pt	3329193329	3494542	3494542	3329970101	3543011	3543011
332912F100 pt	3728403 pt	3728483 pt	3329193331	3494544	3494544	3329970206	3543098	3543098
332912F100 pt	3728403 pt	3728485 pt	3329193333	3494547	3494547	3329970YVW	3543000	3543000
332912F100 pt	3728403 pt	3728485 pt	3329193335	3494585	3494585	3329970YVW	3543002	3543002
			3329193336	3429862	3429862			
332912H	3492J	3492J	3329193337	3494599	3494599	3329980	34310	34310
332912H100	3492J00	3492J00	3329193YVW pt	3429800 pt	3429800 pt	3329980110	3431010	3431010
			3329193YVW pt	3494500 pt	3494500 pt	3329980290	3431098	3431098
332912J	3492K	3492K				3329980YVW	3431	

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3329991	34971	34971	332999AYWV	3499500	3499500	332999GYWV pt...	3999900 pt	3999900 pt
3329991101	3497132	3497132	332999G pt	32918 pt	32918 pt	332999W pt	32910 pt	32910 pt
3329991106	3497133	3497133	332999G pt	34323 pt	34323 pt	332999W pt	34320 pt	34320 pt
3329991111	3497137	3497137	332999G pt	34945 pt	34945 pt	332999W pt	34940 pt	34940 pt
3329991YWV	3497100	3497100	332999G pt	34998 pt	34998 pt	332999W pt	34970 pt	34970 pt
3329993	34973	34973	332999G pt	35373 pt	35373 pt	332999W pt	34990 pt	34990 pt
3329993101	3497352	3497352	332999G pt	39999 pt	39999 pt	332999W pt	35370 pt	35370 pt
3329993106	3497354	3497354	332999G101	3499811	3499811	332999W pt	35990 pt	35990 pt
3329993111	3497358	3497358	332999G106	3499819	3499819	332999W pt	39990 pt	39990 pt
3329993YWV	3497300	3497300	332999G189	3494571	3494571	332999WYWWW pt...	3291000 pt	3291000 pt
3329994	35994 pt	35994 pt	332999G301	3499829	3499829	332999WYWWW pt...	3432000 pt	3432000 pt
3329994101	3599411	3599411	332999G303	3499839	3499839	332999WYWWW pt...	3494000 pt	3494000 pt
3329994106	3599413	3599413	332999G305	3537331	3537331	332999WYWWW pt...	3497000 pt	3497000 pt
3329994111	3599415	3599415	332999G306 pt	3999991 pt	3999913 pt	332999WYWWW pt...	3499000 pt	3499000 pt
3329994116	3599416	3599416	332999G306 pt	3999991 pt	3999942 pt	332999WYWWW pt...	3499000 pt	3499000 pt
3329994121	3599425	3599425	332999G306 pt	3999991 pt	3999944 pt	332999WYWWW pt...	3537000 pt	3537000 pt
3329994YWV	3599400 pt	3599400 pt	332999G306 pt	3999991 pt	3999999 pt	332999WYWWW pt...	3599000 pt	3599000 pt
3329997	34992	34992	332999G313	3291831	3291831	332999WYWWW pt...	3999000 pt	3999000 pt
3329997101	3499211	3499211	332999G316	3291835	3291890 pt	332999WYWWW pt...	3291002 pt	3291002 pt
3329997106	3499213	3499213	332999G399 pt	3432329	3432332 pt	332999WYWWW pt...	3432002 pt	3432002 pt
3329997YWV	3499200	3499200	332999G399 pt	3499898	3499899 pt	332999WYWWW pt...	3494002 pt	3494002 pt
3329999	34993	34993	332999GYWV pt...	3291800 pt	3291800 pt	332999WYWWW pt...	3497002 pt	3497002 pt
3329999100	3499300	3499300	332999GYWV pt...	3432300 pt	3432300 pt	332999WYWWW pt...	3499002 pt	3499002 pt
332999A	34995	34995	332999GYWV pt...	3494500 pt	3494500 pt	332999WYWWW pt...	3537002 pt	3537002 pt
332999A101	3499511	3499511	332999GYWV pt...	3499800 pt	3499800 pt	332999WYWWW pt...	3599002 pt	3599002 pt
332999A106	3499521	3499521	332999GYWV pt...	3537300 pt	3537300 pt	332999WYWWW pt...	3999002 pt	3999002 pt
332999A111	3499531	3499531						
332999A116	3499539	3499539						



# Metal Can Manufacturing

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



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Economics and Statistics Administration  
U.S. CENSUS BUREAU



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The Economic Statistical Methods and Programming Division, **Charles P. Pautler Jr.**, Chief, developed and coordinated the computer processing systems. **Martin S. Harahush**, Assistant Chief for Quinquennial Programs, assisted by **Barbara Lambert** and **Christina Arledge** were responsible for design and implementation of the computer systems. **Gary T. Sheridan**, Chief, Manufacturing and Construction Branch, **Lori A. Guido** and **Roy A. Smith**, Section Chiefs, supervised the preparation of the computer programs.

Computer Services Division, **Debra Williams**, Chief, performed the computer processing.

The staff of the Administrative and Customer Services Division, **Walter C. Odom**, Chief, performed planning, design, composition, editorial review, and printing planning and procurement for publications, Internet products, and report forms. **Cynthia G. Brooks** provided publication coordination and editing.



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# Metal Can Manufacturing

# 1997

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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director

---



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division

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# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division	301-457-4673
Service Sector Statistics Division	301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250 employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special



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census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

### **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the

manufacturing data. This change affects data in the state reports and the general summary.

### **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

### **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332431</b>	<b>Metal can mfg</b> .....	<b>108</b>	<b>272</b>	<b>27 241</b>	<b>1 182 514</b>	<b>23 000</b>	<b>48 935</b>	<b>971 350</b>	<b>3 472 609</b>	<b>8 598 384</b>	<b>12 006 945</b>	<b>306 014</b>
341100	Metal cans .....	N	272	27 241	1 182 514	23 000	48 935	971 350	3 472 609	8 598 384	12 006 945	306 014

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
		Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332431, METAL CAN MFG</b>												
<b>United States</b> .....	-	<b>272</b>	<b>198</b>	<b>27 241</b>	<b>1 182 514</b>	<b>23 000</b>	<b>48 935</b>	<b>971 350</b>	<b>3 472 609</b>	<b>8 598 384</b>	<b>12 006 945</b>	<b>306 014</b>
Alabama .....	-	6	4	373	14 564	329	605	12 222	72 459	76 117	151 240	1 607
California .....	-	42	33	4 082	188 641	3 449	7 277	155 791	547 916	1 395 497	1 916 124	50 621
Colorado .....	-	4	3	600	29 618	519	1 022	23 235	98 883	229 006	326 791	15 064
Florida .....	-	15	8	1 106	56 170	957	2 087	46 027	111 870	461 029	573 412	8 696
Georgia .....	-	6	6	1 356	48 958	1 170	2 592	39 749	162 790	363 072	527 219	43 194
Illinois .....	-	24	14	2 151	86 430	1 800	3 838	70 710	207 423	442 391	652 110	9 888
Indiana .....	-	5	5	542	26 177	438	891	21 054	135 841	280 051	414 517	4 663
Missouri .....	-	7	6	808	36 625	651	1 384	29 952	86 682	252 514	347 765	9 868
New Jersey .....	-	8	6	782	37 827	596	1 423	29 215	106 003	148 247	256 280	6 767
New York .....	-	7	5	831	40 869	688	1 538	33 662	90 400	336 078	447 064	21 515
North Carolina .....	-	5	5	800	41 738	684	1 531	35 065	108 994	349 731	450 962	8 977
Ohio .....	-	21	15	3 348	136 109	2 887	5 719	111 295	387 296	835 014	1 211 785	22 302
Oklahoma .....	-	4	3	326	17 343	281	768	14 822	32 511	170 386	199 903	5 938
Pennsylvania .....	-	14	10	1 198	44 002	1 003	2 267	34 459	127 348	339 187	463 886	8 763
Tennessee .....	-	8	4	284	8 986	247	556	7 295	24 439	84 046	110 796	7 829
Texas .....	-	16	12	1 237	55 919	1 042	2 270	45 691	190 833	451 615	648 705	10 570
Washington .....	-	7	7	871	35 730	729	1 484	30 695	127 319	234 141	347 094	3 403
Wisconsin .....	-	14	14	1 474	61 237	1 196	2 583	48 852	173 052	478 175	651 643	17 994

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332431, METAL CAN MFG</b>		<b>332431, METAL CAN MFG—Con.</b>	
Companies <sup>1</sup> .....	number.. 108	Value added .....	\$.1,000.. 3 472 609
All establishments .....	number.. 272	Total inventories, beginning of year .....	\$.1,000.. 1 256 312
Establishments with 1 to 19 employees .....	number.. 74	Finished goods inventories, beginning of year .....	\$.1,000.. 691 075
Establishments with 20 to 99 employees .....	number.. 69	Work-in-process inventories, beginning of year .....	\$.1,000.. 170 449
Establishments with 100 employees or more .....	number.. 129	Materials and supplies inventories, beginning of year .....	\$.1,000.. 394 788
All employees .....	number.. 27 241	Total inventories, end of year .....	\$.1,000.. 1 324 245
Total compensation <sup>2</sup> .....	\$.1,000.. 1 523 713	Finished goods inventories, end of year .....	\$.1,000.. 753 395
Annual payroll .....	\$.1,000.. 1 182 514	Work-in-process inventories, end of year .....	\$.1,000.. 172 177
Total fringe benefits .....	\$.1,000.. 341 199	Materials and supplies inventories, end of year .....	\$.1,000.. 398 673
Production workers, average for year .....	number.. 23 000	Gross book value of total assets at beginning of year .....	\$.1,000.. 4 886 787
Production workers on March 15 .....	number.. 23 073	Total capital expenditures (new and used) .....	\$.1,000.. 306 014
Production workers on May 15 .....	number.. 23 036	Capital expenditures for buildings and other structures (new and used) .....	\$.1,000.. 22 769
Production workers on August 15 .....	number.. 23 316	Capital expenditures for machinery and equipment (new and used) .....	\$.1,000.. 283 245
Production workers on November 15 .....	number.. 22 575	Total retirements <sup>2</sup> .....	\$.1,000.. 130 772
Production-worker hours .....	1,000.. 48 935	Gross book value of total assets at end of year .....	\$.1,000.. 5 062 029
Production-worker wages .....	\$.1,000.. 971 350	Total depreciation during year <sup>2</sup> .....	\$.1,000.. 370 347
Total cost of materials .....	\$.1,000.. 8 598 384	Total rental payments <sup>2</sup> .....	\$.1,000.. 34 778
Cost of materials, parts, containers, etc., consumed .....	\$.1,000.. 8 143 376	Buildings and other structures rental payments <sup>2</sup> .....	\$.1,000.. 22 917
Cost of resales .....	\$.1,000.. 222 555	Machinery and equipment rental payments <sup>2</sup> .....	\$.1,000.. 11 861
Cost of fuels .....	\$.1,000.. 55 640	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> .....	\$.1,000.. 23 096
Cost of purchased electricity .....	\$.1,000.. 158 784	Response coverage ratio <sup>4</sup> .....	percent.. 88
Cost of contract work .....	\$.1,000.. 18 029	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> .....	\$.1,000.. 208 471
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 3 087 595	Response coverage ratio <sup>4</sup> .....	percent.. 88
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. -	Cost of purchased communications services <sup>3</sup> .....	\$.1,000.. 5 468
Total value of shipments .....	\$.1,000.. 12 006 945	Response coverage ratio <sup>4</sup> .....	percent.. 88
Primary products value of shipments .....	\$.1,000.. 11 301 965	Cost of purchased legal services <sup>3</sup> .....	\$.1,000.. 733
Secondary products value of shipments .....	\$.1,000.. 136 538	Response coverage ratio <sup>4</sup> .....	percent.. 88
Total miscellaneous receipts .....	\$.1,000.. 568 442	Cost of purchased accounting and bookkeeping services <sup>3</sup> .....	\$.1,000.. 563
Value of resales .....	\$.1,000.. 229 608	Response coverage ratio <sup>4</sup> .....	percent.. 88
Contract receipts .....	\$.1,000.. 14 341	Cost of purchased advertising services <sup>3</sup> .....	\$.1,000.. 374
Other miscellaneous receipts .....	\$.1,000.. 324 493	Response coverage ratio <sup>4</sup> .....	percent.. 88
Primary products specialization ratio .....	percent.. 98	Cost of purchased software and other data processing services <sup>3</sup> .....	\$.1,000.. 2 687
Value of primary products shipments made in all industries .....	\$.1,000.. 11 375 788	Response coverage ratio <sup>4</sup> .....	percent.. 88
Value of primary products shipments made in this industry .....	\$.1,000.. 11 301 965	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> .....	\$.1,000.. 10 464
Value of primary products shipments made in other industries .....	\$.1,000.. 73 823	Response coverage ratio <sup>4</sup> .....	percent.. 88
Coverage ratio .....	percent.. 99		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	E <sup>1</sup>	All establishments		All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
		Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332431, METAL CAN MFG</b>												
<b>All establishments</b> .....	-	272	198	27 241	1 182 514	23 000	48 935	971 350	3 472 609	8 598 384	12 006 945	306 014
Establishments with 1 to 4 employees .....	9	33	-	51	1 228	47	57	932	3 748	8 897	12 758	470
Establishments with 5 to 9 employees .....	9	20	-	137	3 795	114	154	3 055	11 924	27 199	39 291	1 445
Establishments with 10 to 19 employees .....	4	21	-	294	8 846	232	401	6 455	22 168	58 000	85 451	2 848
Establishments with 20 to 49 employees .....	-	26	26	934	32 079	749	1 396	22 105	93 671	223 589	315 648	17 548
Establishments with 50 to 99 employees .....	-	43	43	3 159	132 154	2 521	5 315	105 750	417 778	1 128 041	1 549 179	33 170
Establishments with 100 to 249 employees .....	-	111	111	16 527	762 518	14 005	30 734	632 022	2 216 406	5 784 299	7 952 128	219 956
Establishments with 250 to 499 employees .....	-	16	16	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees .....	-	2	2	D	D	D	D	D	D	D	D	D
Establishments with 1,000 to 2,499 employees .....	-	-	-	-	-	-	-	-	-	-	-	-
Establishments with 2,500 employees or more .....	-	-	-	-	-	-	-	-	-	-	-	-
Administrative records <sup>2</sup> .....	9	52	-	291	7 426	251	308	6 093	23 670	57 858	81 604	3 129

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332431</b>	<b>Metal can mfg</b> .....	<b>272</b>	<b>27 241</b>	<b>1 182 514</b>	<b>23 000</b>	<b>48 935</b>	<b>971 350</b>	<b>3 472 609</b>	<b>8 598 384</b>	<b>12 006 945</b>	<b>306 014</b>
3324311	Steel cans and tinware products .....	129	14 594	548 176	12 213	25 921	441 801	1 460 126	3 403 996	4 844 384	132 948
3324313	Aluminum cans, including lids, ends, and parts shipped separately .....	78	12 186	622 079	10 403	22 503	520 508	1 985 554	5 122 246	7 057 961	168 560

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332431</b>	<b>Metal cans . . . . .</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>11 375 788</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>11 665 300</b>
3324311	Steel cans and tinware products . . . . .	N	X	X	4 732 187	N	X	X	4 775 013
33243111	Steel cans, including lids, ends, and parts shipped separately . . . . .	N	X	X	4 594 763	N	X	X	N
3324311101	Steel cans, including lids, ends, and parts shipped separately . . . . .	43	X	X	4 594 763	54	X	X	3 907 174
33243112	Tinware end products, including ice cream cans, but excluding cooking and kitchen utensils . . . . .	N	X	X	114 018	N	X	X	N
3324311206	Tinware end products, including ice cream cans, but excluding cooking and kitchen utensils . . . . .	5	X	X	114 018	12	X	X	819 181
3324311Y	Steel cans and tinware products, nsk . . . . .	N	X	X	23 406	N	X	X	N
3324311YVV	Steel cans and tinware products, nsk . . . . .	N	X	X	23 406	N	X	X	48 658
3324313	Aluminum cans, including lids, ends, and parts shipped separately . . . . .	N	X	X	6 546 429	N	X	X	6 747 038
33243131	Aluminum cans, including lids, ends, and parts shipped separately . . . . .	N	X	X	6 546 429	N	X	X	N
3324313100	Aluminum cans, including lids, ends, and parts shipped separately . . . . .	16	X	X	6 546 429	28	X	X	6 747 038
332431W	Metal cans, nsk, total . . . . .	N	X	X	97 172	N	X	X	143 249
332431WY	Metal cans, nsk, total . . . . .	N	X	X	97 172	N	X	X	N
332431WYWW	Metal cans, nsk, for nonadministrative-record establishments . . . . .	N	X	X	20 861	N	X	X	127 482
332431WYWY	Metal cans, nsk, for administrative-record establishments . . . . .	N	X	X	76 311	N	X	X	14 545

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
<b>3324311</b>	<b>STEEL CANS AND TINWARE PRODUCTS</b>		
	United States . . . . .	<b>4 732 187</b>	<b>4 775 013</b>
	Alabama . . . . .	25 859	31 202
	California . . . . .	1 003 281	806 493
	Florida . . . . .	94 318	88 563
	Illinois . . . . .	491 017	440 440
	Indiana . . . . .	77 109	213 975
	Maryland . . . . .	132 955	161 467
	New Jersey . . . . .	126 990	258 365
	Ohio . . . . .	482 769	457 706
	Pennsylvania . . . . .	392 801	393 121
	Tennessee . . . . .	94 925	63 366
	Texas . . . . .	120 091	142 634
	Wisconsin . . . . .	388 880	306 837
<b>3324313</b>	<b>ALUMINUM CANS, INCLUDING LIDS, ENDS, AND PARTS SHIPPED SEPARATELY</b>		
	United States . . . . .	<b>6 546 429</b>	<b>6 747 038</b>
	California . . . . .	772 181	881 654
	Florida . . . . .	430 623	405 813
	Georgia . . . . .	291 730	217 343
	New York . . . . .	379 153	378 198
	Ohio . . . . .	663 190	668 763
	Texas . . . . .	484 062	599 575
	Virginia . . . . .	411 909	444 988
	Washington . . . . .	214 104	N
	Wisconsin . . . . .	251 756	310 084

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332431</b>	<b>METAL CAN MFG</b>				
33243105	Lids, ends, and parts for metal cans .....	X	1 118 150	X	631 927
33200035	All other fabricated metal products (except castings and forgings) .....	X	D	X	D
33210001	Forgings .....	X	D	X	N
33120073	Steel sheet, strip, and tin mill products .....	X	1 642 997	X	2 025 207
33120025	Steel wire and wire products .....	X	2 760	X	232
33120099	All other steel shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	D
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing .....	X	3 118 392	X	2 567 830
33100049	Other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	2 019 382
33142109	Copper mechanical wire (including extruded and/or drawn shapes) .....	X	11 201	X	24 587
33142125	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	889
33100083	Other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	D	X	1 034
32551003	Paints, varnishes, lacquers, stains, shellacs, japans, enamels, and allied products .....	X	222 389	X	301 371
32552001	Adhesives and sealants .....	X	35 063	X	31 260
32591003	Printing ink .....	X	49 364	X	43 007
32500049	All other chemicals and allied products .....	X	31 501	X	35 294
32221001	Paperboard containers, boxes, and corrugated paperboard .....	X	46 538	X	24 169
00970099	All other materials and components, parts, containers, and supplies .....	X	397 757	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	173 212	X	303 571

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

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stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It



includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.

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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning- and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B.

# NAICS Codes, Titles, and Descriptions

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### **332431 METAL CAN MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing metal cans, lids, and ends.

The data published with NAICS code 332431 include the following SIC industry:

3411 Metal cans

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.



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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic

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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

## Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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Not applicable for this report.

# Appendix G. Comparability of Product Classes and Product Codes: 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3321111	34625	34625	3321165281	3469989	3469989	3322127 pt.	37999 pt.	37999 pt.
332111101	3462511	3462511	3321165291	3469997	3469997	3322127101	3423611	3423611
332111206	3462513	3462513	3321165361	3469971	3469971	3322127111	3423621	3423621
332111311	3462515	3462515	3321165YVW	3469900	3469900	3322127116	3423631	3423631
332111416	3462517	3462517				3322127121	3423641	3423641
332111YVW	3462500	3462500	332116W	34690 pt.	34690 pt.	3322127131	3423681	3423681
			332116WYVW	3469000 pt.	3469000 pt.	3322127136	3423685	3423685
3321113	34626	34626	332116YVW	3469002 pt.	3469002 pt.	3322127141	3799906	3799923 pt.
3321113101	3462611	3462611				3322127199	3423698	3423698
3321113106	3462613	3462613	3321170 pt.	34990 pt.	34990 pt.	3322127226	3524101	3524100 pt.
3321113111	3462616	3462616				3322127YVW pt.	3423600	3423600
3321113YVW	3462600	3462600	3321170 pt.	34996	34996	3322127YVW pt.	3524100 pt.	3524100 pt.
			3321170106	3499633	3499633	3322127YVW pt.	3799900 pt.	3799900 pt.
3321115	34627	34627	3321170211	3499655	3499655			
3321115101	3462712	3462712	3321170321	3499677	3499677			
3321115106	3462716	3462716	3321170401	3499611	3499611			
3321115YVW	3462700	3462700	3321170416	3499666	3499666	3322129 pt.	35455	35455
			3321170426	3499688	3499688	3322129 pt.	36992 pt.	36992 pt.
3321117	34628	34628	3321170YVW pt.	3499000 pt.	3499000 pt.	3322129101	3545511	3545511
3321117101	3462812	3462812	3321170YVW pt.	3499600	3499600	3322129106	3545513	3545513
3321117106	3462816	3462816	3321170YVW	3499002 pt.	3499002 pt.	3322129111	3545515	3545515
332117YVW	3462800	3462800	3321170YVW	3499002 pt.	3499002 pt.	3322129116	3545517	3545517
						3322129121	3545521	3545521
332111W	34620	34620	3322111 pt.	39141 pt.	39141 pt.	3322129126	3545561	3545561
332111WYVW	3462000	3462000				3322129131	3545565	3545565
332111YVW	3462002	3462002	3322111 pt.	39142 pt.	39142 pt.	3322129146	3545577	3545577
			332211101	3421111	3421111	3322129161	3699255	3699200 pt.
3321121	34635	34635	3322111101	3421111	3421111	3322129236	3545571	3545571
3321121101	3463521	3463521	3322111103	3914245	3914270 pt.	3322129341	3545573	3545573
3321121206	3463523	3463523	3322111106	3914155	3914170 pt.	3322129451	3545579	3545579
3321121311	3463525	3463525	3322112111	3421125	3421125	3322129YVW pt.	3545500	3545500
3321121316	3463529	3463529	332211222	3421130	3421130	3322129YVW pt.	3699200 pt.	3699200 pt.
3321121YVW	3463500	3463500	3322112326	3421153	3421153			
			332211331	3421155	3421155	332212W pt.	34230	34230
3321122	34639	34639	332211336	3421157	3421157	332212W pt.	35230 pt.	35230 pt.
3321122101	3463915	3463915	332211344	3421159	3421159			
3321122106	3463925	3463925	332211355	3421180	3421180	332212W pt.	35240 pt.	35240 pt.
3321122111	3463935	3463935	3322113YVW pt.	3421100	3421100	332212W pt.	35450 pt.	35450 pt.
3321122YVW	3463900	3463900	3322113	34212	34212	332212W pt.	36990 pt.	36990 pt.
			3322113101	3421205	3421205	332212W pt.	37990 pt.	37990 pt.
332112W	34630	34630	3322113106	3421210	3421210			
332112WYVW	3463000	3463000	3322113111	3421216	3421216	332212W pt.	39990 pt.	39990 pt.
332112WYVW	3463002	3463002	3322113YVW	3421200	3421200	332212WYVW pt.	3423000	3423000
3321140 pt.	34490 pt.	34490 pt.				332212WYVW pt.	3523000 pt.	3523000 pt.
3321140 pt.	34498	34498	332211W pt.	34210	34210	332212WYVW pt.	3524000 pt.	3524000 pt.
3321140101	3449811	3449811				332212WYVW pt.	3545000 pt.	3545000 pt.
3321140206	3449813	3449813	332211W pt.	39140 pt.	39140 pt.	332212WYVW pt.	3699000 pt.	3699000 pt.
3321140311	3449815	3449815	332211W pt.	3421000	3421000	332212WYVW pt.	3799000 pt.	3799000 pt.
3321140416	3449817	3449817	332211WYVW pt.	3914000	3914000	332212WYVW pt.	3999000 pt.	3999000 pt.
3321140YVW pt.	3449800 pt.	3449800 pt.	332211WYVW pt.	3914000 pt.	3914000 pt.	332212WYVW pt.	3423002	3423002
3321140YVW pt.	3449800	3449800	332211WYVW pt.	3421002	3421002	332212WYVW pt.	3523002 pt.	3523002 pt.
3321140YVW	3449002 pt.	3449002 pt.	332211WYVW pt.	3914002 pt.	3914002 pt.	332212WYVW pt.	3524002 pt.	3524002 pt.
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3321150 pt.	34660	34660	3322121 pt.	34231	34231	332212WYVW pt.	3699002 pt.	3699002 pt.
3321150 pt.	34661	34661				332212WYVW pt.	3799002 pt.	3799002 pt.
3321150 pt.	34662	34662	3322121 pt.	39999 pt.	39999 pt.	332212WYVW pt.	3999002 pt.	3999002 pt.
3321150101	3466105	3466105	3322121101	3423112	3423112			
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3321150103 pt.	3466200 pt.	3466230	3322121311	3423121	3423121	3322130101	3425011	3425011
3321150103 pt.	3466200 pt.	3466232	3322121351	3423141	3423141	3322130106	3425013	3425013
3321150106 pt.	3466123 pt.	3466120	3322121356	3423151	3423151	3322130111	3425016	3425016
3321150106 pt.	3466123 pt.	3466122	3322121361	3423155	3423155	3322130116	3425018	3425018
3321150YVW pt.	3466000	3466000	3322121365	3999971	3999971	3322130122	3425019	3425019
3321150YVW pt.	3466100	3466100	3322121399	3423197	3423197	3322130226	3425031	3425031
3321150YVW	3466002	3466002	3322121416	3423131	3423131	3322130231	3425035	3425035
			3322121421	3423133	3423133	3322130236	3425036	3425036
3321161	34692	34692	3322121426	3423136	3423136	3322130244	3425039	3425039
3321161101	3469201	3469201	3322121431	3423137	3423137	3322130255	3425041	3425041
3321161115	3469215	3469215	3322121436	3423138	3423138			
3321161205	3469205	3469205	3322121444	3423139	3423139	3322130361	3425043	3425043
3321161311	3469211	3469211	3322121YVW pt.	3423100	3423100	3322130365	3425045	3425045
3321161331	3469231	3469231	3322121YVW pt.	3999900 pt.	3999900 pt.	3322130377	3425049	3425049
3321161352	3469252	3469252				3322130YVW	3425000	3425000
3321161354	3469253	3469253	3322123 pt.	34234	34234	3322130YVW	3425002	3425002
3321161388	3469288	3469288						
3321161398	3469298	3469298	3322123 pt.	3523E pt.	3523E pt.	3322141	34694	34694
3321161421	3469220	3469220	3322123101	3423414	3423414	3322141111	3469411	3469411
			3322123106	3423433	3423433	3322141221	3469414	3469414
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3321161525	3469225	3469225	3322123121	3423498	3423498	3322141241	3469429	3469429
3321161561	3469261	3469261	3322123216	3523E80	3523E00 pt.	3322141YVW	3469400	3469400
3321161571	3469271	3469271	3322123YVW pt.	3423400	3423400			
3321161584	3469284	3469284	3322123YVW pt.	3523E00 pt.	3523E00 pt.			
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			3322125	34235	34235	3322143	34695	34695
3321163	34696	34696	3322125101	3423511	3423511	3322143101	3469507	3469507
3321163100	3469600	3469600	3322125206	3423512	3423512	3322143211	3469509	3469509
			3322125311	3423521	3423521	3322143221	3469515	3469515
3321165	34699	34699	3322125316	3423522	3423522	3322143231 pt.	3469525 pt.	3469521
3321165101	3469941	3469941	3322125317	3423522	3423522	3322143231 pt.	3469525 pt.	3469524
3321165211	3469948	3469948	3322125331	3423531	3423531	3322143241 pt.	3469599 pt.	3469527
3321165221	3469951	3469951	3322125333	3423541	3423541	3322143241 pt.	3469599 pt.	3469528
3321165231	3469959	3469959	3322125YVW	3423500	3423500	3322143YVW	3469500	3469500
3321165241	3469961	3469961						
3321165251	3469969	3469969	3322127 pt.	34236	34236	332214W	34690 pt.	34690 pt.
3321165271	3469985	3469985	3322127 pt.	35241 pt.	35241 pt.	332214WYVW	3469000 pt.	3469000 pt.
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1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3323111	34481	34481	332312321	3442298	3442298	3323233YVW pt	3446200	3446200
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3323111111	3448118	3448118	3323213YVW	3442200	3442200			
332311201	3448115	3448115				3323235	34463	34463
332311YVW	3448100	3448100	3323215 pt	24991 pt	24991 pt	3323235101	3446310	3446310
			3323215 pt	34423	34423	3323235106	3446312	3446312
3323113	34482	34482	3323215 pt	34497	34497	3323235211	3446320	3446320
3323113101	3448211	3448211	332321501 pt	3442321	3442321	3323235216	3446322	3446322
3323113106	3448214	3448214	332321501 pt	3449773	3449773	3323235YVW	3446300	3446300
3323113111	3448215	3448215	332321506 pt	2499141	2499141			
3323113216	3448216	3448216	332321506 pt	3442325	3442325			
3323113221	3448217	3448217	332321506 pt	3449775	3449775			
3323113226	3448218	3448218	3323215111 pt	3442351	3442351			
3323113231	3448226	3448226	3323215111 pt	3449779	3449779			
3323113236	3448227	3448227	3323215YVW pt	2499100 pt	2499100 pt			
3323113241	3448254	3448254	3323215YVW pt	3442300	3442300			
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3323114W	34480	34480				3323239 pt	3523E pt	3523E pt
3323114YVW	3448000	3448000	3323217	34424	34424	3323239106	3446512	3446512
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3323121 pt	34411	34411	3323217111	3442413	3442413	3323239311	3523E84	3523E00 pt
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3323121101 pt	3449443	3449443	3323219101	3442511	3442511			
3323121206 pt	3441142	3441142	3323219106	3442512	3442512			
3323121206 pt	3449447	3449447	3323219111	3442551	3442551			
3323121211 pt	3441143	3441143	3323219YVW	3442500	3442500			
3323121211 pt	3449452	3449452						
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3323121226	3441147	3441147						
3323121231	3441171	3441171	332321W pt	34490 pt	34490 pt			
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3323125126	3441359	3441359	3323221216	3444129	3444129			
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3323125136	3441398	3441398						
3323125201	3441316	3441316	3323223	34442	34442			
3323125YVW	3441300	3441300	3323223101	3444213	3444213			
			3323223106	3444215	3444215			
332312W pt	34410	34410	3323223111	3444219	3444219			
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332312W pt	34490 pt	34490 pt						
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332312WYVW pt	3449000 pt	3449000 pt	3323227101	3444411	3444411			
332312WYVW pt	3441002	3441002	3323227206	3444417	3444417			
332312WYVW pt	3449002 pt	3449002 pt	3323227211	3444423	3444423			
			3323227216	3444429	3444429			
3323130 pt	34430 pt	34430 pt	3323227221	3444431	3444431			
			3323227YVW	3444400	3444400			
3323130 pt	34432 pt	34432 pt						
3323130111	3443244	3443244	3323229	34445	34445			
3323130116	3443246	3443246	3323229106	3444516	3444516			
3323130121	3443248	3443248	3323229111	3444517	3444517			
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3323130301	3443221	3443221	3323229YVW	3444500	3444500			
3323130346	3443299	3443299 pt						
3323130406	3443236	3443236						
3323130YVW pt	3443000 pt	3443000 pt	332322A	34447	34447			
3323130YVW pt	3443200	3443200	332322A101	3444721	3444721			
3323130YVW	3443002 pt	3443002 pt	332322A106	3444725	3444725			
			332322A111	3444731	3444731			
			332322A116	3444741	3444741			
			332322AYVW	3444700	3444700			
3323211	34421	34421						
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3323211113	3442116	3442116	332322C101	3444811	3444811			
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3323211119	3442121	3442121	332322C311	3444819	3444819			
3323211201	3442105	3442105	332322CYVW	3444800	3444800			
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3323211222	3442122	3442122						
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3323211664	3442143	3442143						
3323211667	3442144	3442144	3323231	34461	34461			
3323211758	3442139	3442139	3323231106	3446112	3446112			
3323211770	3442145	3442145	3323231111	3446115	3446115			
3323211837	3442127	3442127	3323231116	3446117	3446117			
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			3323231YVW	3446100	3446100			
3323213	34422	34422	3323233 pt	34496	34496			
3323213101	3442220	3442220	3323233101 pt	3446210	3446210			
3323213111	3442222	3442222	3323233101 pt	3449611	3449611			
3323213116	3442224	3442224	3323233106 pt	3446212	3446212			
3323213121	3442230	3442230	3323233106 pt	3449632	3449632			
3323213226	3442235	3442235	3323233211	3446220	3446220			
3323213231	3442241	3442241	3323233216	3446222	3446222			
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3323213246	3442249	3442249						



1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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3329113	34912	34912	332912L	3492M	3492M	332919W pt	34940 pt	34940 pt
3329113101	3491201	3491201	332912L100	3492M00	3492M00	332919W pt	34990 pt	34990 pt
3329113103	3491211	3491211	332912N	3492N	3492N	332919WYVVV pt	3429000 pt	3429000 pt
3329113105	3491221	3491221	332912N100	3492N00	3492N00	332919WYVVV pt	3494000 pt	3494000 pt
3329113107	3491223	3491223	332912W pt	34920	34920	332919WYVVV pt	3499000 pt	3499000 pt
3329113109	3491231	3491231	332912W pt	37280 pt	37280 pt	332919WYVVV pt	3429002 pt	3429002 pt
3329113111	3491235	3491235	332912WYVVV pt	3492000	3492000	332919WYVVV pt	3494002 pt	3494002 pt
3329113113	3491241	3491241	332912WYVVV pt	3728000 pt	3728000 pt	332919WYVVV pt	3499002 pt	3499002 pt
3329113215	3491243	3491243	332912WYVVV pt	3492002	3492002	332919WYVVV pt	3499002 pt	3499002 pt
3329113YVV	3491200	3491200	332912WYVVV pt	3728002 pt	3728002 pt			
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3329115101	3491311	3491311	3329131101	3432102	3432102	3329911000	3562100	3562100
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3329115107	3491347	3491347	3329131211	3432108	3432108	3329915	35623	35623
3329115109	3491359	3491359	3329131316	3432110	3432110	3329915000	3562300	3562300
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3329115YVV	3491300	3491300	3329131326 pt	3432111 pt	3432111 pt	3329917000	3562400	3562400
3329117	34914	34914	3329131326 pt	3432111 pt	3432111 pt	3329919	35629	35629
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3329117105	3491415	3491415	3329131441	3432118	3432118	332991WYVVV	3562000	3562000
3329117107	3491417	3491417	3329131446	3432120	3432120	332991WYVVV	3562002	3562002
3329117109	3491421	3491421	3329131451	3432122	3432122	3329920	34820	34820
3329117111	3491423	3491423	3329131451	3432122	3432122	3329920101	3482025	3482025
3329117113	3491425	3491425	3329131456	3432125	3432125	3329920206	3482035	3482035
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3329117217	3491461	3491461	3329131466	3432130	3432130	3329920416	3482055	3482055
3329117YVV	3491400	3491400	3329131468 pt	3432133 pt	3432133 pt	3329920521	3482061	3482061
3329119	34915	34915	3329131468 pt	3432133 pt	3432133 pt	3329920626	3482069	3482069
3329119101	3491511	3491511	3329131468 pt	3432133 pt	3432133 pt	3329920731	3482098	3482098
3329119103	3491523	3491523	3329131YVV	3432100	3432100	3329920YVV	3482000	3482000
3329119105	3491535	3491535	3329133	34322	34322	3329920YVV	3482002	3482002
3329119107	3491547	3491547	3329133131	3432224	3432224	3329931	34831	34831
3329119209	3491561	3491561	3329133136	3432227	3432227	3329931101	3483111	3483111
3329119YVV	3491500	3491500	3329133141	3432230	3432230	3329931106	3483135	3483135
332911B	34916	34916	3329133146	3432233	3432233	3329931111	3483151	3483151
332911B101	3491611	3491611	3329133151	3432236	3432236	3329931116	3483171	3483171
332911B103	3491623	3491623	3329133201 pt	3432202 pt	3432202 pt	3329931121	3483181	3483181
332911B105	3491631	3491631	3329133201 pt	3432202 pt	3432202 pt	3329931YVV	3483100	3483100
332911B107	3491633	3491633	3329133206 pt	3432206 pt	3432206 pt	3329933	34833	34833
332911B109	3491641	3491641	3329133211	3432212	3432212	3329933101	3483311	3483311
332911B111	3491653	3491653	3329133216	3432215	3432215	3329933206	3483331	3483331
332911B113	3491665	3491665	3329133221	3432218	3432218	3329933YVV	3483300	3483300
332911B115	3491678	3491678	3329133226	3432221	3432221	332993W	34830	34830
332911B117	3491698	3491698	3329133256	3432239	3432239	332993WYVVV	3483000	3483000
332911BYVV	3491600	3491600	3329133261	3432245	3432245	332993WYVVV	3483002	3483002
332911D	34917	34917	3329133266	3432250	3432250	332993YVV	34841	34841
332911D101	3491711	3491711	3329133YVV	3432200	3432200	3329941	3484100	3484100
332911D103	3491713	3491713	3329137	34323	34323 pt	3329943	34842	34842
332911D105	3491715	3491715	3329137101	3432302	3432302	3329943101	3484211	3484211
332911D107	3491727	3491727	3329137106	3432305	3432305	3329943206	3484213	3484213
332911D109	3491731	3491731	3329137111	3432311	3432311	3329943311	3484216	3484216
332911D111	3491739	3491739	3329137116 pt	3432315 pt	3432315 pt	3329943416	3484221	3484221
332911D213	3491798	3491798	3329137121 pt	3432321 pt	3432321 pt	3329943421	3484223	3484223
332911DYVV	3491700	3491700	3329137121 pt	3432321 pt	3432321 pt	3329943426	3484226	3484226
332911F	34918	34918	3329137131	3432327	3432327	3329943431	3484254	3484254
332911F100	3491800	3491800	3329137141 pt	3432331 pt	3432331 pt	3329943536	3484265	3484265
332911H	34919	34919	3329137141 pt	3432331 pt	3432331 pt	3329943541	3484274	3484274
332911H100	3491900	3491900	3329137224	3432324	3432325 pt	3329943546	3484281	3484281
332911W	34910	34910	3329137226	3432326	3432325 pt	3329943YVV	3484200	3484200
332911WYVV	3491000	3491000	3329137YVV	3432300 pt	3432300 pt			
332911WYVV	3491002	3491002	332913W	34320 pt	34320 pt	332994W	34840	34840
3329121 pt	3492A	3492A	332913WYVV	3432000 pt	3432000 pt	332994WYVVV	3484000	3484000
3329121 pt	3492A	3492A	332913WYVV	3432002 pt	3432002 pt	332994WYVV	3484002	3484002
3329121100 pt	37284 pt	37284 pt	3329191 pt	34944	34944	3329951	34891	34891
3329121100 pt	3492A00	3492A00	3329191101 pt	34998 pt	34998 pt	3329951106	3489121	3489121
3329121100 pt	3728400 pt	3728400 pt	3329191101 pt	3494421	3494421	3329951111	3489151	3489151
3329121100 pt	3728401 pt	3728403 pt	33291911203	3498311	3498311	3329951116	3489171	3489171
3329121100 pt	3728402 pt	3728475 pt	3329191205	3494431	3494431	3329951YVV	3489100	3489100
3329123 pt	3492B	3492B	3329191207	3494451	3494451	3329952	34892	34892
3329123 pt	37284 pt	37284 pt	3329191209	3494499	3494499	3329952100	3489200	3489200
3329123100 pt	3492B00	3492B00	3329191YVV pt	3494400	3494400	332995W	34890	34890
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3329123100 pt	3728402 pt	3728483 pt	3329193 pt	34298 pt	34298 pt	332995WYVV	3489002	3489002
3329123100 pt	3728402 pt	3728485 pt	3329193 pt	34298 pt	34298 pt	3329961	33534	33534
3329125	3492C	3492C	3329193 pt	34298 pt	34298 pt	3329961100	3353400	3353400
3329125100	3492C00	3492C00	3329193101	34945	34945 pt	3329963	34980	34980
3329127	3492D	3492D	3329193101	3494511	3494511	3329963101	3498013	3498013
3329127100	3492D00	3492D00	3329193103	3494512	3494512	3329963203	3498015	3498015
3329129	3492E	3492E	3329193105	3494513	3494513	3329963205	3498017	3498017
3329129100	3492E00	3492E00	3329193107	3494514	3494514	3329963207	3498019	3498019
332912B	3492F	3492F	3329193109	3494515	3494515	3329963YVV	3498000 pt	3498000 pt
332912B100	3492F00	3492F00	3329193111	3494516	3494516			
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332912D100	3492G00	3492G00	33291931215	3494518	3494518	332996WYVVV pt	3353000 pt	3353000 pt
332912F pt	3492H	3492H	3329193217	3494519	3494519	332996WYVVV pt	3353002 pt	3353002 pt
332912F pt	37284 pt	37284 pt	3329193319	3494521	3494521	332996WYVV	3498000	3498000
332912F100 pt	3492H00	3492H00	3329193321	3494523	3494523	332996WYVVV pt	3498002	3498002
332912F100 pt	3728400 pt	3728400 pt	3329193323	3494533	3494533	332996WYVVV pt	3498002	3498002
332912F100 pt	3728403 pt	3728473 pt	3329193325	3494534	3494534	3329970	35430	35430
332912F100 pt	3728403 pt	3728475 pt	3329193327	3494537	3494537	3329970101	3543011	3543011
332912F100 pt	3728403 pt	3728483 pt	3329193329	3494542	3494542	3329970206	3543098	3543098
332912F100 pt	3728403 pt	3728483 pt	3329193331	3494544	3494544	3329970YVV	3543000	3543000
332912F100 pt	3728403 pt	3728485 pt	3329193333</					

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3329991	34971	34971	332999AYWV	3499500	3499500	332999GYWV pt...	3999900 pt	3999900 pt
3329991101	3497132	3497132	332999G pt	32918 pt	32918 pt	332999W pt	32910 pt	32910 pt
3329991106	3497133	3497133	332999G pt	34323 pt	34323 pt	332999W pt	34320 pt	34320 pt
3329991111	3497137	3497137	332999G pt	34945 pt	34945 pt	332999W pt	34940 pt	34940 pt
3329991YWV	3497100	3497100	332999G pt	34998 pt	34998 pt	332999W pt	34970 pt	34970 pt
3329993	34973	34973	332999G pt	34998 pt	34998 pt	332999W pt	34990 pt	34990 pt
3329993101	3497352	3497352	332999G pt	35373 pt	35373 pt	332999W pt	34990 pt	34990 pt
3329993106	3497354	3497354	332999G pt	39999 pt	39999 pt	332999W pt	35370 pt	35370 pt
3329993111	3497358	3497358	332999G101	3499811	3499811	332999W pt	35990 pt	35990 pt
3329993YWV	3497300	3497300	332999G106	3499819	3499819	332999W pt	39990 pt	39990 pt
3329994	35994 pt	35994 pt	332999G189	3494571	3494571	332999W pt	3291000 pt	3291000 pt
3329994101	3599411	3599411	332999G301	3499829	3499829	332999WYWWW pt...	3432000 pt	3432000 pt
3329994106	3599413	3599413	332999G303	3499839	3499839	332999WYWWW pt...	3494000 pt	3494000 pt
3329994111	3599415	3599415	332999G305	3537331	3537331	332999WYWWW pt...	3497000 pt	3497000 pt
3329994116	3599416	3599416	332999G306 pt	3999991 pt	3999913 pt	332999WYWWW pt...	3499000 pt	3499000 pt
3329994121	3599425	3599425	332999G306 pt	3999991 pt	3999944 pt	332999WYWWW pt...	3537000 pt	3537000 pt
3329994YWV	3599400 pt	3599400 pt	332999G306 pt	3999991 pt	3999999 pt	332999WYWWW pt...	3599000 pt	3599000 pt
3329997	34992	34992	332999G313	3291831	3291831	332999WYWWW pt...	3999000 pt	3999000 pt
3329997101	3499211	3499211	332999G316	3291835	3291890 pt	332999WYWWW pt...	3291002 pt	3291002 pt
3329997106	3499213	3499213	332999G399 pt	3432329	3432332 pt	332999WYWWW pt...	3432002 pt	3432002 pt
3329997YWV	3499200	3499200	332999G399 pt	3499898	3499899 pt	332999WYWWW pt...	3494002 pt	3494002 pt
3329999	34993	34993	332999GYWV pt...	3291800 pt	3291800 pt	332999WYWWW pt...	3497002 pt	3497002 pt
3329999100	3499300	3499300	332999GYWV pt...	3432300 pt	3432300 pt	332999WYWWW pt...	3499002 pt	3499002 pt
332999A	34995	34995	332999GYWV pt...	3494500 pt	3494500 pt	332999WYWWW pt...	3537002 pt	3537002 pt
332999A101	3499511	3499511	332999GYWV pt...	3499800 pt	3499800 pt	332999WYWWW pt...	3599002 pt	3599002 pt
332999A106	3499521	3499521	332999GYWV pt...	3537300 pt	3537300 pt	332999WYWWW pt...	3999002 pt	3999002 pt
332999A111	3499531	3499531						
332999A116	3499539	3499539						



# Other Metal Container Manufacturing

# 1997

Issued October 1999

EC97M-3324D

## 1997 Economic Census

*Manufacturing*

Industry Series



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## 1997 Economic Census

*Manufacturing*

Industry Series



**U.S. Department of Commerce**

**William M. Daley,**

Secretary

**Robert L. Mallett,**

Deputy Secretary

**Economics**

**and Statistics**

**Administration**

**Robert J. Shapiro,**

Under Secretary for

Economic Affairs

**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**

Director



**Economics  
and Statistics  
Administration**

**Robert J. Shapiro,**  
Under Secretary  
for Economic Affairs



**U.S. CENSUS BUREAU**

**Kenneth Prewitt,**  
Director

**William G. Barron,**  
Deputy Director

**Paula J. Schneider,**  
Principal Associate Director  
for Programs

**Frederick T. Knickerbocker,**  
Associate Director  
for Economic Programs

**Thomas L. Mesenbourg,**  
Assistant Director  
for Economic Programs

**William G. Bostic Jr.,**  
Chief, Manufacturing  
and Construction Division



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-- Not applicable for this report.

# Introduction to the Economic Census

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## PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the Nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in 2 and 7.

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the Federal Government use the data to monitor economic activity and assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

## ALL-NEW INDUSTRY CLASSIFICATIONS

Data from the 1997 Economic Census are published primarily on the basis of the North American Industry Classification System (NAICS), unlike earlier censuses, which were published according to the Standard Industrial Classification (SIC) system. NAICS is in the process of being adopted in the United States, Canada, and Mexico. Most economic census reports cover one of the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information

52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Foodservices
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 96 subsectors (three-digit codes), 313 industry groups (four-digit codes), and, as implemented in the United States, 1170 industries (five- and six-digit codes).

## RELATIONSHIP TO SIC

While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The industry definitions discuss the relationships between NAICS and SIC industries. Where changes are significant, it will not be possible to construct time series that include data for points both before and after 1997.

For 1997, data for auxiliary establishments (those functioning primarily to manage, service, or support the activities of their company's operating establishments, such as a central administrative office or warehouse) will not be included in the sector-specific reports. These data will be published separately.

## GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for the states, metropolitan areas (MAs), counties, parishes, and corporate municipalities including cities, towns, villages, and boroughs. Respondents were

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required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from Internal Revenue Service tax forms is used as a basis for coding.

## **BASIS OF REPORTING**

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company.

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 1997 data are expressed in 1997 dollars, and 1992 data, in 1992 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

## **AVAILABILITY OF ADDITIONAL DATA**

### **Reports in Print and Electronic Media**

All results of the 1997 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on compact discs (CD-ROM) for sale by the Census Bureau. Unlike previous censuses, only selected highlights are published in printed reports. For more information, including a description of electronic and printed reports being issued, see the Internet site, or write to U.S. Census Bureau, Washington, DC 20233-8300, or call Customer Services at 301-457-4100.

### **Special Tabulations**

Special tabulations of data collected in the 1997 Economic Census may be obtained, depending on availability of time and personnel, in electronic or tabular form. The data will be summaries subject to the same rules prohibiting disclosure of confidential information (including name, address, kind of business, or other data for individual business establishments or companies) that govern the regular publications.

Special tabulations are prepared on a cost basis. A request for a cost estimate, as well as exact specifications on the type and format of the data to be provided, should be directed to the Chief of the division named below, U.S. Census Bureau, Washington, DC 20233-8300. To discuss a special tabulation before submitting specifications, call the appropriate division:

Manufacturing and Construction Division 301-457-4673  
Service Sector Statistics Division 301-457-2668

## **HISTORICAL INFORMATION**

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some covering service trades in 1933. Censuses of construction, manufacturing, and the other business service censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated: providing comparable census data across economic sectors, using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other Federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census questionnaires.

The range of industries covered in the economic censuses expanded between 1967 and 1992. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. All of the census reports printed since 1967 are still available for sale on microfiche from the Census Bureau. CD-ROMs issued from the 1987 and 1992 Economic Censuses contain databases including nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

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## SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys is published in the *Guide to the 1997 Economic Census and Related Statistics* at [www.census.gov/econguide](http://www.census.gov/econguide). More information on the methodology, procedures, and history of the censuses will be published in the *History of the 1997 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with the 1997 Economic Census data:

A	Standard error of 100 percent or more.
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals.
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue.
N	Not available or not comparable.
Q	Revenue not collected at this level of detail for multiestablishment firms.
S	Withheld because estimates did not meet publication standards.

V	Represents less than 50 vehicles or .05 percent.
X	Not applicable.
Y	Disclosure withheld because of insufficient coverage of merchandise lines.
Z	Less than half the unit shown.
a	0 to 19 employees.
b	20 to 99 employees.
c	100 to 249 employees.
e	250 to 499 employees.
f	500 to 999 employees.
g	1,000 to 2,499 employees.
h	2,500 to 4,999 employees.
i	5,000 to 9,999 employees.
j	10,000 to 24,999 employees.
k	25,000 to 49,999 employees.
l	50,000 to 99,999 employees.
m	100,000 employees or more.
p	10 to 19 percent estimated.
q	20 to 29 percent estimated.
r	Revised.
s	Sampling error exceeds 40 percent.
nec	Not elsewhere classified.
nsk	Not specified by kind.
–	Represents zero (page image/print only).
(CC)	Consolidated city.
(IC)	Independent city.

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# Manufacturing

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## SCOPE

The 1997 Economic Census – Manufacturing covers all manufacturing establishments with one or more paid employees. Manufacturing is defined as the mechanical, physical, or chemical transformation of materials or substances into new products. The assembly of components into new products is also considered manufacturing, except when it is appropriately classified as construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and typically use power-driven machines and materials-handling equipment. Also included in the manufacturing sector are some establishments that make products by hand, like custom tailors and the makers of custom draperies. While manufacturers typically do not sell to the public, some establishments like bakeries and candy stores that make products on the premises may be included.

While logging and publishing are no longer in the scope of manufacturing, data for these industries are included in the manufacturing industry reports, but are not included in the manufacturing state, summary, and other reports.

## GENERAL

This report, from the 1997 Economic Census – Manufacturing, is one of a series of 480 industry reports and 51 geographic area reports, each of which provides statistics for individual industries or states, respectively. Seven of the industry reports are for industries no longer in the manufacturing sector but are included with manufacturing for the 1997 census year. Also included for this sector are General, Product, and Materials Consumed Summary reports, a special report on Concentration Ratios in Manufacturing, and data files on Location of Manufacturing Plants.

Each industry report presents data for a six-digit North American Industry Classification System (NAICS) industry. A description of the particular NAICS industry may be found in Appendix B. These reports include such statistics as number of establishments, employment, payroll, value added by manufacture, cost of materials consumed, value of shipments, capital expenditures, etc. Explanations of these and other terms may be found in Appendix A. The industry reports also include data for states with 100 employees or more in the industry.

State reports, which include the District of Columbia, present similar statistics at the “all manufacturing” level for each state and its metropolitan areas (MAs) with 250

employees or more, and for counties, consolidated cities, and places with 500 employees or more. The state reports also include six-digit NAICS level data for industries with 100 employees or more in the state.

The General Summary report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

The Products and Materials Consumed reports summarize the products and materials data published in the industry reports. The Product Summary report also includes data from the Current Industrial Reports (CIR) and a special table with data for products that are primary to more than one industry, which are not in the industry reports.

The Concentration Ratios report publishes data on the percentage of value of shipments accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Hirschmann-Herfindahl Indexes for each industry.

The Location of Manufacturing data files contain statistics on the number of establishments for the three- and six-digit NAICS industry by state, county, place, and ZIP Code by employment-size of the establishment.

## GEOGRAPHIC AREAS COVERED

Statistics at the six-digit NAICS industry level are shown for states and the District of Columbia in both the state and industry reports for cells with 100 employees or more.

The state reports also include data at the “all manufacturing” level for a variety of geographies that meet the employment criteria.

Data are available for the metropolitan areas (MAs) with 250 employees or more. The term MA is a general term used to encompass all of the specifically defined metropolitan areas. A consolidated metropolitan statistical area (CMSA) is made up of two or more contiguous primary metropolitan statistical areas (PMSAs) with a combined population of at least 1 million. A PMSA is a subdivision of a CMSA that demonstrates very strong internal economic and social links separate from the ties to other portions of the CMSA. A metropolitan statistical area (MSA) is an integrated economic and social unit with a population of at least 50,000. An MA is made up of one or more counties meeting standards of metropolitan character. In New England, cities and towns, rather than counties, are the

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component geographic units. Determination of the MAs was made by the Office of Management and Budget (OMB) as of June 30, 1997. The population estimates were from the 1990 Census of Population or a subsequent special census. When applicable, the make-up of an MA is included in Appendix E. Changes to geographical boundaries are noted in Appendix D.

The state reports include data for counties with 500 employees or more. These are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs and census areas. Maryland, Missouri, Nevada, and Virginia have one or more places that are independent of county organizations. These places are treated as counties and places. The counties and places are defined as of January 1, 1997.

The state reports include data for places with 500 employees or more. Places are typically cities, towns, and villages. They may be incorporated municipalities, semi-independent municipalities, special economic urban areas (SEUAs), or other place equivalents.

The state reports also include data for consolidated cities with 500 employees or more. Consolidated cities are made up of separately incorporated municipalities.

## **COMPARABILITY OF THE 1992 AND 1997 CENSUSES**

The adoption of the North American Industry Classification System (NAICS) has had a major impact on the comparability of data between the 1992 and 1997 censuses. Approximately half of the industries in the manufacturing sector of NAICS do not have comparable industries in the Standard Industrial Classification (SIC) system that was used in the past. If industries are not comparable between the two censuses, historic data are not shown. When applicable, Appendix G shows the product class and product comparability between the two systems.

While most of the change affecting the manufacturing sector was change within the sector, some industries left manufacturing and others came into manufacturing. Prominent among those leaving manufacturing are logging and portions of publishing. Prominent among the industries coming into the manufacturing sector are bakeries, candy stores where candy is made on the premises, custom tailors, makers of custom draperies, and tire retreading. Data for the industries coming into manufacturing as well as those leaving manufacturing are included in the manufacturing industry report series for 1997. However, the state and summary reports only include data for industries in the NAICS definition of manufacturing.

Another change resulting from the conversion to NAICS is that data for central administrative offices (CAOs) associated with manufacturing are not included along side the manufacturing data. This change affects data in the state reports and the general summary.

## **DISCLOSURE**

In accordance with Federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments classified in a specific industry or geography is not considered a disclosure, and may be released even when other information is withheld.

The disclosure analysis for the industry statistics files is based on the total value of shipments. When the total value of shipments cannot be shown without disclosing information for individual companies, the complete line is suppressed except for capital expenditures. However, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures that can be suppressed even though value of shipments data are published.

## **AVAILABILITY OF MORE FREQUENT ECONOMIC DATA**

The Census Bureau conducts the Annual Survey of Manufactures (ASM) in each of the 4 years between the economic censuses. The ASM is a probability-based sample of approximately 58,000 establishments and collects many of the same industry statistics (including employment, payroll, value of shipments, etc.) as the economic census. However, there are selected statistics not included in the ASM. Among these are the number of companies and establishments, detailed product and materials data, and substate geographic data.

In addition to the ASM, the Census Bureau conducts a Current Industrial Reports (CIR) program. The CIR publishes detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. For the 1997 Economic Census – Manufacturing, the annual CIR data are included in the Product Summary report.

The Census Bureau also conducts the monthly Manufacturers' Shipments, Inventories, and Orders (M3) program, which publishes detailed statistics for manufacturing industries at the U.S. level.

**Table 1. Industry Statistics on NAICS Basis With Distribution Among 1987 SIC-Based Industries: 1997**

[NAICS codes appear in bold type. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS or SIC code	Industry	Com-panies <sup>1</sup>	All estab-lish-ments <sup>2</sup>	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
				Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332439</b>	<b>Other metal container mfg . . . . .</b>	<b>454</b>	<b>492</b>	<b>14 116</b>	<b>413 053</b>	<b>11 024</b>	<b>22 051</b>	<b>269 870</b>	<b>929 430</b>	<b>1 220 381</b>	<b>2 147 553</b>	<b>56 836</b>
341200	Metal barrels, drums, & pails . . .	N	151	6 098	185 145	4 814	10 366	125 598	464 319	790 225	1 261 414	30 307
342910	Hardware, n.e.c. (pt) . . . . .	N	115	3 952	111 308	3 028	5 840	70 209	198 419	182 344	383 412	13 276
344420	Sheet metal work (pt) . . . . .	N	126	2 074	60 030	1 572	2 840	38 284	148 433	138 396	275 440	7 162
349920	Fabricated metal products, n.e.c. (pt) . . . . .	N	96	1 928	55 078	1 557	2 899	34 826	115 181	105 604	220 512	5 955
353710	Industrial trucks & tractors (pt) . . .	N	4	64	1 492	53	106	953	3 078	3 812	6 775	136

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.  
<sup>2</sup>Includes establishments with payroll at any time during the year.

**Table 2. Industry Statistics for Selected States: 1997**

[States that are disclosures or with less than 100 employees are not shown. For explanation of terms, see appendixes. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	All establishments			All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expendi-tures (\$1,000)
	E <sup>1</sup>	Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332439, OTHER METAL CONTAINER MFG</b>												
<b>United States . . . . .</b>	<b>2</b>	<b>492</b>	<b>173</b>	<b>14 116</b>	<b>413 053</b>	<b>11 024</b>	<b>22 051</b>	<b>269 870</b>	<b>929 430</b>	<b>1 220 381</b>	<b>2 147 553</b>	<b>56 836</b>
Alabama . . . . .	-	11	3	238	7 129	173	413	5 047	17 692	34 795	54 133	2 411
California . . . . .	3	64	17	1 508	44 167	1 167	2 557	28 600	98 354	109 318	209 242	4 908
Florida . . . . .	3	13	3	258	6 468	206	300	4 417	11 040	18 817	29 806	596
Georgia . . . . .	5	5	3	155	3 147	125	174	2 233	7 164	10 589	18 413	351
Illinois . . . . .	-	27	11	1 091	40 529	829	1 893	23 321	83 290	115 770	200 100	6 447
Indiana . . . . .	1	14	6	649	18 645	557	1 164	13 301	57 432	58 628	108 809	2 455
Michigan . . . . .	6	26	7	661	18 076	525	982	11 883	34 477	33 615	68 270	1 997
Missouri . . . . .	-	16	4	417	12 438	305	449	7 096	32 155	39 479	70 337	1 949
New Jersey . . . . .	2	18	5	581	17 213	471	905	11 509	27 340	64 228	93 614	3 140
New York . . . . .	3	19	4	266	7 314	210	401	4 510	14 545	12 856	27 570	391
North Carolina . . . . .	-	11	7	296	8 271	244	445	4 797	21 381	32 577	54 165	870
Ohio . . . . .	2	41	18	1 112	33 135	840	1 654	21 758	71 920	116 584	188 417	5 388
Pennsylvania . . . . .	2	33	13	923	27 234	740	1 451	18 476	78 934	99 891	178 267	2 917
Tennessee . . . . .	-	11	5	1 287	36 714	1 027	1 957	25 998	33 163	46 052	79 399	2 779
Texas . . . . .	-	30	9	994	25 816	749	1 619	15 957	65 794	95 753	160 451	2 798
Washington . . . . .	-	7	3	116	4 340	82	192	2 264	7 816	6 314	14 628	438
Wisconsin . . . . .	1	15	4	244	6 558	207	432	4 621	15 847	10 819	26 452	428

\* Hawaii has no incorporated places in the sense of functioning governmental units; however, in agreement with Hawaiian law, the Bureau of the Census reports data for census designated places (CDPs) which have been designated as place equivalents. Those CDPs, only for the state of Hawaii, with 2,500 or more population are recognized.

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1-10 to 19 percent; 2-20 to 29 percent; 3-30 to 39 percent; 4-40 to 49 percent; 5-50 to 59 percent; 6-60 to 69 percent; 7-70 to 79 percent; 8-80 to 89 percent; 9-90 percent or more.



**Table 3. Detailed Statistics by Industry: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Item	Value	Item	Value
<b>332439, OTHER METAL CONTAINER MFG</b>		<b>332439, OTHER METAL CONTAINER MFG—Con.</b>	
Companies <sup>1</sup> . . . . . number..	454	Value added . . . . . \$1,000..	929 430
All establishments . . . . . number..	492	Total inventories, beginning of year . . . . . \$1,000..	299 601
Establishments with 1 to 19 employees . . . . . number..	319	Finished goods inventories, beginning of year . . . . . \$1,000..	59 421
Establishments with 20 to 99 employees . . . . . number..	148	Work-in-process inventories, beginning of year . . . . . \$1,000..	67 435
Establishments with 100 employees or more . . . . . number..	25	Materials and supplies inventories, beginning of year . . . . . \$1,000..	172 745
All employees . . . . . number..	14 116	Total inventories, end of year . . . . . \$1,000..	297 737
Total compensation <sup>2</sup> . . . . . \$1,000..	519 654	Finished goods inventories, end of year . . . . . \$1,000..	72 013
Annual payroll . . . . . \$1,000..	413 053	Work-in-process inventories, end of year . . . . . \$1,000..	57 101
Total fringe benefits . . . . . \$1,000..	106 601	Materials and supplies inventories, end of year . . . . . \$1,000..	168 623
Production workers, average for year . . . . . number..	11 024	Gross book value of total assets at beginning of year . . . . . \$1,000..	712 610
Production workers on March 12 . . . . . number..	11 125	Total capital expenditures (new and used) . . . . . \$1,000..	56 836
Production workers on May 12 . . . . . number..	11 063	Capital expenditures for buildings and other structures (new and used) . . . . . \$1,000..	10 889
Production workers on August 12 . . . . . number..	10 997	Capital expenditures for machinery and equipment (new and used) . . . . . \$1,000..	45 947
Production workers on November 12 . . . . . number..	10 911	Total retirements <sup>2</sup> . . . . . \$1,000..	24 639
Production-worker hours . . . . . 1,000..	22 051	Gross book value of total assets at end of year . . . . . \$1,000..	744 807
Production-worker wages . . . . . \$1,000..	269 870	Total depreciation during year <sup>2</sup> . . . . . \$1,000..	46 985
Total cost of materials . . . . . \$1,000..	1 220 381	Total rental payments <sup>2</sup> . . . . . \$1,000..	29 255
Cost of materials, parts, containers, etc., consumed . . . . . \$1,000..	1 089 032	Buildings and other structures rental payments <sup>2</sup> . . . . . \$1,000..	11 932
Cost of resales . . . . . \$1,000..	73 117	Machinery and equipment rental payments <sup>2</sup> . . . . . \$1,000..	17 323
Cost of fuels . . . . . \$1,000..	14 055	Cost of purchased services for the repair of buildings and other structures <sup>3</sup> . . . . . \$1,000..	3 318
Cost of purchased electricity . . . . . \$1,000..	20 531	Response coverage ratio <sup>4</sup> . . . . . percent..	78
Cost of contract work . . . . . \$1,000..	23 646	Cost of purchased services for the repair of machinery and equipment <sup>3</sup> . . . . . \$1,000..	23 353
Quantity of electricity purchased for heat and power . . . . . 1,000 kWh..	304 884	Response coverage ratio <sup>4</sup> . . . . . percent..	78
Quantity of electricity generated less sold for heat and power . . . . . 1,000 kWh..	—	Cost of purchased communications services <sup>3</sup> . . . . . \$1,000..	5 116
Total value of shipments . . . . . \$1,000..	2 147 553	Response coverage ratio <sup>4</sup> . . . . . percent..	78
Primary products value of shipments . . . . . \$1,000..	1 878 297	Cost of purchased legal services <sup>3</sup> . . . . . \$1,000..	5 501
Secondary products value of shipments . . . . . \$1,000..	147 508	Response coverage ratio <sup>4</sup> . . . . . percent..	78
Total miscellaneous receipts . . . . . \$1,000..	121 748	Cost of purchased accounting and bookkeeping services <sup>3</sup> . . . . . \$1,000..	2 041
Value of resales . . . . . \$1,000..	89 898	Response coverage ratio <sup>4</sup> . . . . . percent..	78
Contract receipts . . . . . \$1,000..	12 312	Cost of purchased advertising services <sup>3</sup> . . . . . \$1,000..	3 318
Other miscellaneous receipts . . . . . \$1,000..	19 538	Response coverage ratio <sup>4</sup> . . . . . percent..	78
Primary products specialization ratio . . . . . percent..	92	Cost of purchased software and other data processing services <sup>3</sup> . . . . . \$1,000..	2 840
Value of primary products shipments made in all industries . . . . . \$1,000..	2 207 455	Response coverage ratio <sup>4</sup> . . . . . percent..	78
Value of primary products shipments made in this industry . . . . . \$1,000..	1 878 297	Cost of purchased refuse removal (including hazardous waste) services <sup>3</sup> . . . . . \$1,000..	5 355
Value of primary products shipments made in other industries . . . . . \$1,000..	329 158	Response coverage ratio <sup>4</sup> . . . . . percent..	78
Coverage ratio . . . . . percent..	85		

<sup>1</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>2</sup>These items are collected in the ASM and estimated for the remaining establishments; therefore, the levels of estimation are higher than for other items in the table.

<sup>3</sup>Based on ASM sample data.

<sup>4</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those ASM establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note: The amounts shown for purchased services reflect only those services that establishments purchase from other companies.

**Table 4. Industry Statistics by Employment Size: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

Employment size class	All establishments			All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
	E <sup>1</sup>	Total	With 20 employees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332439, OTHER METAL CONTAINER MFG</b>												
<b>All establishments</b> .....	2	492	173	14 116	413 053	11 024	22 051	269 870	929 430	1 220 381	2 147 553	56 836
Establishments with 1 to 4 employees .....	9	142	—	318	8 181	252	417	5 380	17 835	18 542	36 503	1 616
Establishments with 5 to 9 employees .....	8	99	—	649	16 173	503	802	10 779	36 352	35 489	72 153	2 161
Establishments with 10 to 19 employees .....	4	78	—	1 093	29 462	801	1 405	18 515	61 147	67 450	129 120	3 458
Establishments with 20 to 49 employees .....	2	88	88	2 891	86 562	2 235	4 635	55 304	187 973	225 581	414 152	12 524
Establishments with 50 to 99 employees .....	1	60	60	4 367	129 137	3 392	6 812	84 550	311 771	457 766	771 177	18 971
Establishments with 100 to 249 employees .....	—	23	23	D	D	D	D	D	D	D	D	D
Establishments with 250 to 499 employees .....	9	1	1	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees .....	—	—	—	—	—	—	—	—	—	—	—	—
Establishments with 1,000 to 2,499 employees .....	—	1	1	D	D	D	D	D	D	D	D	D
Establishments with 2,500 employees or more .....	—	—	—	—	—	—	—	—	—	—	—	—
Administrative records <sup>2</sup> .....	9	205	—	1 057	24 327	813	1 338	16 226	53 629	67 928	122 231	3 722

<sup>1</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. This technique was also used for a small number of other establishments whose reports were not received at the time data were tabulated. The following symbols are shown where estimated data based on administrative-record data account for 10 percent or more of the figures shown: 1–10 to 19 percent; 2–20 to 29 percent; 3–30 to 39 percent; 4–40 to 49 percent; 5–50 to 59 percent; 6–60 to 69 percent; 7–70 to 79 percent; 8–80 to 89 percent; 9–90 percent or more.

<sup>2</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

**Table 5. Industry Statistics by Industry and Primary Product Class Specialization: 1997**

[For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS industry or product class code	Industry or primary product class	All establishments	All employees		Production workers			Value added by manufacture (\$1,000)	Cost of materials (\$1,000)	Value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
<b>332439</b>	<b>Other metal container mfg</b> .....	<b>492</b>	<b>14 116</b>	<b>413 053</b>	<b>11 024</b>	<b>22 051</b>	<b>269 870</b>	<b>929 430</b>	<b>1 220 381</b>	<b>2 147 553</b>	<b>56 836</b>
3324391	Steel pails (1 to 12 gallon capacity) and fabricated steel boxes .....	50	2 890	89 594	2 375	4 840	61 099	199 792	266 869	467 330	14 350
3324393	Steel shipping barrels and drums, excluding beer barrels (more than 12 gallon capacity) .....	61	3 815	117 180	2 964	6 474	77 670	301 896	529 152	836 313	16 906
3324395	Other metal container manufacturing .....	50	D	D	D	D	D	D	D	D	D
3324397	Air cargo containers, metal .....	1	D	D	D	D	D	D	D	D	D

**Table 6a. Products Statistics: 1997 and 1992**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS product code	Product	1997				1992			
		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments		Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)			Quantity	Value (\$1,000)
<b>332439</b>	<b>Other metal containers .....</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>2 207 455</b>	<b>N</b>	<b>X</b>	<b>X</b>	<b>N</b>
3324391	Steel pails, 1 to 12 gallon capacity @ .....	N	X	X	527 886	N	X	X	N
33243911	Steel pails, 1 to 12 gallon capacity .....	N	X	X	295 363	N	X	X	N
3324391100	Steel pails, 1 to 12 gallon capacity .....	21	X	X	295 363	N	X	X	N
33243913	Fabricated steel boxes .....	N	X	X	232 523	N	X	X	N
3324391306	Fabricated steel boxes for packaging and shipping .....	30	X	X	86 705	19	X	X	26 311
3324391311	Fabricated steel boxes other than for shipping (ammunition boxes, jewelry cases, etc.) .....	39	X	X	145 818	46	X	X	167 607
3324391Y	Steel pails (1 to 12 gallon capacity) and fabricated steel boxes, nsk .....	N	X	X	-	N	X	X	N
3324391YVV	Steel pails (1 to 12 gallon capacity) and fabricated steel boxes, nsk .....	N	X	X	-	N	X	X	N
3324393	Steel shipping barrels and drums, excluding beer barrels (more than 12 gallon capacity) .....	N	X	X	790 947	N	X	X	753 768
33243931	Steel shipping barrels and drums, excluding beer barrels (more than 12 gallon capacity) .....	N	X	X	790 947	N	X	X	N
3324393100	Steel shipping barrels and drums, excluding beer barrels (more than 12 gallon capacity) .....	37	X	X	790 947	42	X	X	753 768
3324395	Other metal container manufacturing .....	N	X	X	D	N	X	X	N
33243951	Metal barrels, vacuum and insulated bottles, grain bins and vats, other barrels .....	N	X	X	D	N	X	X	N
3324395101	Metal fluid milk shipping and delivery containers (except crates) and sheet metal grain bins and vats, excluding drying floors, fans, and heaters (steel and aluminum) .....	35	X	X	187 015	N	X	X	N
3324395106	Vacuum and insulated bottles, jugs, and chests (except those made principally of foam plastics) and other sheet metal bins and vats, incl feed storage bins and sheet metal vats (steel and aluminum) .....	58	X	X	225 356	N	X	X	N
3324395199	All other metal barrels (including beer barrels and parts for metal barrels and pails) .....	12	X	X	D	14	X	X	N
3324395Y	Other metal container manufacturing, nsk .....	N	X	X	161	N	X	X	N
3324395YVV	Other metal container manufacturing, nsk .....	N	X	X	161	N	X	X	N
3324397	Air cargo containers, metal .....	N	X	X	D	N	X	X	N
33243971	Air cargo containers, metal .....	N	X	X	D	N	X	X	N
3324397100	Air cargo containers, metal .....	2	X	D	D	N	X	X	N
332439W	Other metal container manufacturing, nsk, total .....	N	X	X	428 658	N	X	X	N
332439WY	Other metal container manufacturing, nsk .....	N	X	X	428 658	N	X	X	N
332439WYVV	Other metal container manufacturing, nsk, for nonadministrative-record establishments .....	N	X	X	312 623	N	X	X	N
332439WYWY	Other metal container manufacturing, nsk, for administrative-record establishments .....	N	X	X	116 035	N	X	X	N

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: <sup>P</sup> 10 to 19 percent estimated; <sup>Q</sup> 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

**Table 6b. Product Class Shipments for Selected States: 1997 and 1992**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 1997. For meaning of abbreviations and symbols, see introductory text. For explanations of terms, see appendixes]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
		1997	1992
3324391	<b>STEEL PAILS, 1 TO 12 GALLON CAPACITY @</b>		
	United States .....	<b>527 886</b>	<b>N</b>
	California .....	63 930	N
	Illinois .....	39 822	N
	Massachusetts .....	32 976	N
	Michigan .....	20 831	N
	New York .....	10 096	N
	Ohio .....	63 055	N
	Pennsylvania .....	44 594	N
	Tennessee .....	4 784	N
Texas .....	39 878	N	
3324393	<b>STEEL SHIPPING BARRELS AND DRUMS, EXCLUDING BEER BARRELS (MORE THAN 12 GALLON CAPACITY)</b>		
	United States .....	<b>790 947</b>	<b>753 768</b>
	California .....	52 219	75 655
	Illinois .....	116 452	106 785
	North Carolina .....	41 346	25 146
	Ohio .....	99 053	112 864
	Pennsylvania .....	89 504	72 224
	Texas .....	98 105	91 803
3324395	<b>OTHER METAL CONTAINER MANUFACTURING</b>		
	United States .....	<b>D</b>	<b>N</b>
	California .....	28 766	N
	Indiana .....	72 475	N
	Iowa .....	28 548	N
	Minnesota .....	5 528	N
	New Jersey .....	16 928	N
	Ohio .....	8 062	N
	Pennsylvania .....	11 397	N
	Texas .....	2 350	N
Wisconsin .....	11 663	N	
3324397	<b>AIR CARGO CONTAINERS, METAL</b>		
	United States .....	<b>D</b>	<b>N</b>

# Additional information is available for this item; see Appendix F.

@ Additional data are available for these codes at the aggregate U.S. level in the Current Industrial Report (CIR) series; see Appendix F for the CIR survey number and title.

\$ This product is primary to more than one industry; see Appendix F for a listing of the related product codes.

**Table 7. Materials Consumed by Kind: 1997 and 1992**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see appendixes]

NAICS material code	Material consumed	1997		1992	
		Quantity	Delivered cost (\$1,000)	Quantity	Delivered cost (\$1,000)
<b>332439</b>	<b>OTHER METAL CONTAINER MFG</b>				
33243105	Lids, ends, and parts for metal cans .....	X	49 563	X	30 800
33200035	All other fabricated metal products (except castings and forgings) .....	X	68 538	X	21 724
33210001	Forgings .....	X	13 240	X	N
33120073	Steel sheet, strip, and tin mill products .....	X	371 998	X	N
33120025	Steel wire and wire products .....	X	1 631	X	N
33120099	All other steel shapes and forms (except castings, forgings, and fabricated metal products) .....	X	101 306	X	32 770
33131501	Aluminum and aluminum-base alloy sheet, plate, foil, and welded tubing .....	X	23 277	X	N
33100049	Other aluminum and aluminum-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	15 836	X	N
33142109	Copper mechanical wire (including extruded and/or drawn shapes) .....	X	170	X	N
33142125	All other copper and copper-base alloy shapes and forms (except castings, forgings, and fabricated metal products) .....	X	298	X	N
33100083	Other nonferrous shapes and forms (except castings, forgings, and fabricated metal products) .....	X	7 233	X	N
32551003	Paints, varnishes, lacquers, stains, shellacs, japans, enamels, and allied products .....	X	40 219	X	N
32552001	Adhesives and sealants .....	X	1 973	X	868
32591003	Printing ink .....	X	1 734	X	232
32500049	All other chemicals and allied products .....	X	6 709	X	4 965
32221001	Paperboard containers, boxes, and corrugated paperboard .....	X	23 714	X	N
00970099	All other materials and components, parts, containers, and supplies .....	X	127 338	X	N
00971000	Materials, ingredients, containers, and supplies, n.s.k. ....	X	234 255	X	N

# Additional information is available for this item; see Appendix F.

Note: For some establishments, data have been estimated from central unit values which are based on quantity-value relationships of reported data. The following symbols are used when percentage of each quantity figure estimated in this manner equals or exceeds 10 percent of published figure: P 10 to 19 percent estimated; Q 20 to 29 percent estimated. If 30 percent or more is estimated, figure is replaced by S.

# Appendix A.

## Explanation of Terms

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### **BEGINNING- AND END-OF-YEAR INVENTORIES**

Respondents were asked to report their beginning-of-year and end-of-year inventories at cost or market. Effective with the 1982 Economic Census, this change to a uniform instruction for reporting inventories was introduced for all sector reports. Prior to 1982, respondents were permitted to value inventories using any generally accepted accounting method (FIFO, LIFO, market, to name a few). Beginning in 1982, LIFO users were asked to first report inventory values prior to the LIFO adjustment and then to report the LIFO reserve and the LIFO value after adjustment for the reserve.

### **Inventory Data by Stage of Fabrication**

Total inventories and three detailed components (1) finished goods, (2) work-in-process, and (3) materials, supplies, fuels, etc., were collected.

When using inventory data by stage of fabrication for “all industries” and at the three-digit subsector level, it should be noted that an item treated as a finished product by an establishment in one industry may be reported as a raw material by an establishment in a different industry. For example, the finished-product inventories of a steel mill would be reported as raw materials by a stamping plant. Such differences are present in the inventory figures by stage of fabrication shown for all publication levels.

### **COST OF MATERIALS**

This term refers to direct charges actually paid or payable for items consumed or put into production during the year, including freight charges and other direct charges incurred by the establishment in acquiring these materials. It includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.

Included in this item are:

1. Cost of parts, components, containers, etc.—Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.

3. Cost of fuels consumed for heat and power—Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity—The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work—This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

### **Specific Materials Consumed**

In addition to the total cost of materials, which every establishment was required to report, information also was collected for most manufacturing industries on the consumption of major materials used in manufacturing. The inquiries were restricted to those materials which were important parts of the cost of production in a particular industry and for which cost information was available from manufacturers' records. If less than \$25,000 of a listed material was consumed by an establishment, the cost data could be reported in the “Cost of all other materials...,” Census material code 00970099. Also, the cost of materials for small establishments for which administrative records or short forms were used was imputed into the “Materials not specified by kind,” Census materials code 00971000.

### **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive

stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

### **COST OF PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of purchased services for the repair of buildings and other structures, the repair of machinery, communication services, legal services, accounting and bookkeeping services, advertising, software and other data processing services, and refuse removal. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services.

Included in the cost of purchased services for the repair of buildings and machinery are payments made for all maintenance and repair work on buildings and equipment. Payments made to other establishments of the same company and for repair and maintenance of any leased property also are included. Extensive repairs or reconstruction that was capitalized is considered capital expenditures and is, therefore, excluded from this item. Repair and maintenance costs provided by an owner as part of a rental contract or incurred directly by an establishment in using its own work force also are excluded.

Included in the cost of purchased advertising services are payments for printing, media coverage, and other advertising services and materials.

Included in the cost of purchased software and other data processing services are all purchases by the establishment from other companies. Excluded are services provided by other establishments of the same company (such as by a separate data processing unit).

Included in the cost of purchased refuse removal services are all costs of refuse removal services paid by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures.

### **Response Coverage Ratio**

A response coverage ratio is a measure of the extent to which respondents report for an item. The estimate is made by calculating the ratio value of the weighted total employment data for all the ASM establishments that report the item to the weighted total employment data for all ASM establishments classified in an industry (reporters and non-reporters).

### **DEPRECIATION CHARGES FOR FIXED ASSETS**

This item includes depreciation and amortization charged during the year against assets. Depreciation charged against fixed assets acquired since the beginning of the year and against assets sold or retired during the year are components of this category. Respondents were requested to make certain that they did not report accumulated depreciation.

### **EMPLOYEES**

This item includes all full-time and part-time employees on the payrolls of operating manufacturing establishments during any part of the pay period which included the 12th of the months specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during these pay periods. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are excluded. The "all employees" number is the average number of production workers plus the number of other employees in mid-March. The number of production workers is the average for the payroll periods including the 12th of March, May, August, and November.

#### **Production Workers**

This item includes workers (up through the line-supervisor level) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping (but not delivering), maintenance, repair, janitorial and guard services, product development, auxiliary production for plant's own use (e.g., power plant), recordkeeping, and other services closely associated with these production operations at the establishment covered by the report. Employees above the working-supervisor level are excluded from this item.

#### **All Other Employees**

This item covers nonproduction employees of the manufacturing establishment including those engaged in factory supervision above the line-supervisor level. It

includes sales (including driver-salespersons), sales delivery (highway truck drivers and their helpers), advertising, credit, collection, installation and servicing of own products, clerical and routine office functions, executive, purchasing, financing, legal, personnel (including cafeteria, medical, etc.), professional, and technical employees. Also included are employees on the payroll of the manufacturing establishment engaged in the construction of major additions or alterations utilized as a separate work force.

### **FRINGE BENEFITS**

Fringe benefits are divided into legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation whether they were employer initiated or the result of collective bargaining. They include the employer portion of such plans as insurance premiums, premiums for supplemental accident and sickness insurance, pension plans, supplemental unemployment compensation, welfare plans, stock purchase plans on which the employer payment is not subject to withholding tax, and deferred profit-sharing plans. They exclude such items as company-operated cafeterias, in-plant medical services, free parking lots, discounts on employee purchases, and uniforms and work clothing for employees.

### **GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)**

Total value of depreciable assets is collected on all census forms. It shows the value of depreciable assets for the beginning of year and end of year. The data encompass all fixed depreciable assets on the books of establishments. The values shown (book value) represent the actual cost of assets at the time they were acquired, including all costs incurred in making the assets usable (such as transportation and installation). Included are all buildings, structures, machinery, and equipment (production, office, and transportation equipment) for which depreciation reserves are maintained. Excluded are nondepreciable capital assets including inventories and intangible assets, such as timber and mineral rights.

The definition of fixed depreciable assets is consistent with the definition of capital expenditures. For example, expenditures include actual capital outlays during the year rather than the final value of equipment put in place and buildings completed during the year. Accordingly, the value of assets at the end of the year includes the value of construction in progress.

In addition, respondents were requested to make certain that assets at the beginning of the year plus capital expenditures, less retirements, equaled assets at the end of the year.

### **NUMBER OF ESTABLISHMENTS AND COMPANIES**

A separate report was required for each manufacturing establishment (plant) with one employee or more. An establishment is defined as a single physical location where manufacturing is performed. A company, on the other hand, is defined as a business organization consisting of one establishment or more under common ownership or control.

If the company operated at different physical locations, even if the individual locations were producing the same line of goods, a separate report was requested for each location. If the company operated in two or more distinct lines of manufacturing at the same location, a separate report was requested for each activity.

An establishment not in operation for any portion of the year was requested to return the report form with the proper notation in the "Operational Status" section of the form. In addition, the establishment was requested to report data on any employees, capital expenditures, inventories, or shipments from inventories during the year.

### **PAYROLL**

This item includes the gross earnings of all employees on the payrolls of operating manufacturing establishments paid in the calendar year. Respondents were told they could follow the definition of payrolls used for calculating the Federal withholding tax. It includes all forms of compensation, such as salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind, prior to such deductions as employees' social security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of corporations; it excludes payments to proprietors or partners of unincorporated concerns. Also excluded are payments to members of Armed Forces and pensioners carried on the active payrolls of manufacturing establishments.

The census definition of payrolls is identical to that recommended to all Federal statistical agencies by the Office of Management and Budget. It should be noted that this definition does not include employers' social security contributions or other nonpayroll labor costs, such as employees' pension plans, group insurance premiums, and workers' compensation.

The ASM provides estimates of employers' total supplemental labor costs (those required by Federal and state laws and those incurred voluntarily or as part of collective bargaining agreements).

### **PRODUCT CODES AND CLASSES OF PRODUCTS**

NAICS United States industries are identified by a six-digit code, in contrast to the four-digit SIC code. The longer code accommodates the large number of sectors and allows more flexibility in designing subsectors. Each

product or service is assigned a ten-digit code. The product coding structure represents an extension by the Census Bureau of the six-digit industry classifications of the manufacturing and mining sectors. The classification system operates so that the industrial coverage is progressively narrower with the successive addition of digits. This is illustrated as follows:

NAICS level	NAICS code	Description
Industry . . . . .	33461	Manufacturing and reproduction of magnetic and optical media
U.S. industry . . . . .	334612	Reproduction of software
Product class . . . . .	3346120	Prerecorded compact disc (except software), tape, and record reproducing
BLS link code . . . . .	3346120X	
Product code . . . . .	3346120XXX	

As in previous censuses, data were collected for most industries on the quantity and value of individual products shipped. In the 1997 census program, information was collected on the output of almost 10,000 individual product items.

In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products (ten-digit codes), and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits.

The list of products for which separate information was collected was prepared after consultation with industry and government representatives. Comparability with previous figures was given considerable weight in the selection of product categories so that comparable 1992 information is presented for most products.

Typically, both quantity and value of shipments information were collected. However, if quantity was not significant or could not be reported by manufacturers, only value of shipments was collected.

Shipments include both commercial shipments and transfers of products to other plants of the same company. For industries in which a considerable portion of the total shipments is transferred to other plants of the same company, separate information on interplant transfers also was collected. Moreover, for products that are used to a large degree within the same establishment as materials or components in the fabrication of other products, total production and often consumption of the item within the plant (quantity produced and consumed) was collected. Typically, the information on production also was collected for products for which there are significant differences between total production and shipments in a given year because of wide fluctuations in finished goods inventories. Other measures of output of products with long production cycles were used as appropriate and feasible.

## PRIMARY PRODUCT CLASS CODE

This file presents selected statistics for establishments according to their degree of specialization in products primary to their industry. This field contains either the six-digit North American Industrial Classification System (NAICS) industry code corresponding to all establishments in the industry, or the seven-digit NAICS product class code for all establishments within the industry that are specialized in a particular product class. Product class specialization is determined by evaluating the ratio of the largest primary product class shipments to total product shipments (primary plus secondary, excluding miscellaneous receipts) for the establishment.

## PRODUCTION-WORKER HOURS

This item covers hours worked or paid for at the plant, including actual overtime hours (not straight-time equivalent hours). It excludes hours paid for vacations, holidays, or sick leave.

## QUANTITY OF ELECTRIC ENERGY CONSUMED FOR HEAT AND POWER

Data on the cost of purchased electric energy were collected on all census forms. However, data on the quantity of purchased electric energy were collected only on the Annual Survey of Manufactures (ASM) form. In addition, information is collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.

## RENTAL PAYMENTS

Total rental payments are collected on all census forms. However, the breakdown between rental payments for buildings and other structures and rental payments for machinery and equipment is collected only on the ASM forms. This item includes rental payments for the use of all items for which depreciation reserves would be maintained if they were owned by the establishment, e.g., structures and buildings, and production, office, and transportation equipment. Excluded are royalties and other payments for the use of intangibles and depletable assets and land rents where separable.

When an establishment of a multiestablishment company was charged rent by another part of the same company for the use of assets owned by the company, it was instructed to exclude that cost from rental payments. However, the book value (original cost) of these company-owned assets was to be reported as assets of the establishment at the end of the year.

If there were assets at an establishment rented from another company and the rents were paid centrally by the head office of the establishment, the company was instructed to report these rental payments as if they were paid directly by the establishment.



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## RETIREMENTS OF DEPRECIABLE ASSETS

Included in this item is the gross value of assets sold, retired, scrapped, destroyed, etc., during the calendar year. When a complete operation or establishment changed ownership, the respondent was instructed to report the value of the assets sold at the original cost as recorded in the books of the seller. The respondent also was requested to report retirements of equipment or structures owned by a parent company that the establishment was using as if it were a tenant.

## TOTAL CAPITAL EXPENDITURES (NEW AND USED)

For establishments in operation and any known plants under construction, manufacturers were asked to report their new and used expenditures for (1) permanent additions and major alterations to manufacturing establishments and (2) machinery and equipment used for replacement and additions to plant capacity if they were of the type for which depreciation accounts were ordinarily maintained.

Totals for expenditures include the costs of assets leased from nonmanufacturing concerns through capital leases. New facilities owned by the Federal Government but operated under contract by private companies and plant and equipment furnished to the manufacturer by communities and nonprofit organizations are excluded. Also excluded are expenditures for land and cost of maintenance and repairs charged as current operating expenses.

For any equipment or structure transferred for the use of the reporting establishment by the parent company or one of its subsidiaries, the value at which it was transferred to the establishment was to be reported. If an establishment changed ownership during the year, the cost of the fixed assets (building and equipment) was to be reported.

## VALUE ADDED

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, containers, fuel, purchased electricity, and contract work from the value of shipments (products manufactured plus receipts for services rendered). The result of this calculation is adjusted by the addition of value added by merchandising operations (i.e., the difference between the sales value and the cost of merchandise sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process between the beginning and end-of-year inventories.

For those industries where value of production is collected instead of value of shipments, value added is adjusted only for the change in work-in-process inventories between the beginning and end of year. For those

industries where value of work done is collected, the value added does not include an adjustment for the change in finished goods or work-in-process inventories.

“Value added” avoids the duplication in the figure for value of shipments that results from the use of products of some establishments as materials by others. Value added is considered to be the best value measure available for comparing the relative economic importance of manufacturing among industries and geographic areas.

## VALUE OF SHIPMENTS

This item covers the received or receivable net selling values, f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts, such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and sold without further processing. Included are all items made by or for the establishments from material owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

In the case of multiunit companies, the manufacturer was requested to report the value of products transferred to other establishments of the same company at full economic or commercial value, including not only the direct cost of production but also a reasonable proportion of “all other costs” (including company overhead) and profit.

In addition to the value for NAICS defined products, aggregates of the following categories of miscellaneous receipts are reported as part of a total establishment’s value of product shipments:

1. Reported contract work—Receipts for work or services that a plant performed for others on their materials.
2. Value of resales—Sales of products brought and sold without further manufacture, processing, or assembly.
3. Other miscellaneous receipts—Such as repair work, installation, sales of scrap, etc.

Industry primary product value of shipments represents one of the three components of value of shipments. These components are:

1. Primary products value of shipments.
2. Secondary product value of shipments.
3. Total miscellaneous receipts.

Primary product shipments is used in the calculations of industry specialization ratio and industry coverage ratio. The term “Value of primary products shipments made in this industry” is used in this publication and refers to the same data.

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## **Duplication in Cost of Materials and Value of Shipment**

The aggregate of the cost of materials and value of shipments figures for industry groups and for all manufacturing industries includes large amounts of duplication since the products of some industries are used as materials by others. This duplication results, in part, from the addition of related industries representing successive stages in the production of a finished manufactured product. Examples are the addition of flour mills to bakeries in the food group and the addition of pulp mills to paper mills in the paper and allied products group of industries. Estimates of the overall extent of this duplication indicate that the value of manufactured products exclusive of such duplication (the value of finished manufactures) tends to approximate two-thirds of the total value of products reported in the annual survey.

Duplication of products within individual industries is significant within a number of industry groups, e.g., machinery and transportation industries. These industries frequently include complete machinery and their parts. In this case, the parts made for original equipment are materials consumed for assembly plants in the same industry.

Even when no significant amount of duplication is involved, value of shipments figures are deficient as measures of the relative economic importance of individual manufacturing industries or geographic areas because of the wide variation in ratio of materials, labor, and other processing costs of value of shipments, both among industries and within the same industry.

Before 1962, cost of materials and value of shipments were not published for some industries which included considerable duplication. Since then, these data have been published for all industries at the U.S. level and beginning in 1964, for all geographic levels.

## **Specialization and Coverage Ratios**

These items are not collected on the report forms but are derived from the data shown in Table 3. An establishment is classified in a particular industry if its shipments of primary products of that industry exceed in value its shipments of the products of any other single industry.

An establishment's shipments include those products assigned to an industry (primary products), those considered primary to other industries (secondary products), and receipts for miscellaneous activities (merchandising, contract work, resales, etc.). Specialization and coverage ratios have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1a through 5 and data on product shipments shown in Tables 6a and 6b.

Specialization ratio represents the ratio of primary product shipments to total product shipments (primary and secondary, excluding miscellaneous receipts) for the establishments classified in the industry.

Coverage ratio represents the ratio of primary products shipped by the establishments classified in the industry to the total shipments of such products that are shipped by all manufacturing establishments wherever classified.

## Appendix B. NAICS Codes, Titles, and Descriptions

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### **332439 OTHER METAL CONTAINER MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing metal (light gauge) containers (except cans).

The data published with NAICS code 332439 include the following SIC industries:

3412 Metal barrels, drums, and pails  
3429 Hardware, n.e.c. (pt)  
3444 Sheet metal work (pt)  
3499 Fabricated metal products, n.e.c. (pt)  
3537 Industrial trucks and tractors (pt)

# Appendix C.

## Coverage and Methodology

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### MAIL/NONMAIL UNIVERSE

The manufacturing universe includes about 400,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing, but not those industries leaving the manufacturing sector in the classification change. The amounts of information requested from manufacturing establishments were dependent upon a number of factors. The more important considerations were the size of the company and whether it was included in the annual survey of manufactures (ASM). The methods of obtaining information for the various subsets of the universe to arrive at the aggregate figures shown in the publication are described below:

1. Small single-establishment companies not sent a report form.

Approximately 40 percent of the manufacturing establishments were small single-establishment companies that were excused from filing a census report. Selection of these establishments was based on two factors: annual payroll and our ability to assign the correct six-digit NAICS industry classification to the establishment. For each four-digit Standard Industrial Classification (SIC) industry code, an annual payroll cutoff was determined. These cutoffs were derived so that the establishments with payroll less than the cutoff were expected to account for no more than 3 percent of the value of shipments for the industry. Generally, all single-establishment companies with less than 5 employees were excused, while all establishments with more than 20 employees were mailed forms. Establishments below the cutoff that could not be directly assigned a six-digit NAICS code were mailed a classification report which requested information for assigning NAICS industry codes. Establishments below the cutoff that could be directly assigned a six-digit NAICS code were excused from filing any report. For below cutoff establishments, information on the physical location, payroll, and receipts was obtained from the administrative records of other Federal agencies under special arrangements that safeguarded their confidentiality.

Estimates of data for these small establishments were developed using industry averages in conjunction with the administrative information. The value of shipments and cost of materials were not distributed among specific products and materials for these

establishments but were included in the product and material “not specified by kind” (nsc) categories.

The industry classification codes included in the administrative-record files were assigned on the basis of brief descriptions of the general activity of the establishment. As a result, an indeterminate number of establishments were erroneously coded to a four-digit SIC industry and then erroneously re-coded to a six-digit NAICS industry. This was especially true whenever there was a relatively fine line of demarcation between industries or between manufacturing and nonmanufacturing activity.

Sometimes the administrative-record cases had only two- or three-digit SIC group classification codes available in the files. For the 1997 Economic Census – Manufacturing, these establishments were sent a separate classification form, which requested information on the products and services of the establishment. This form was used to code many of these establishments to the appropriate six-digit NAICS level. Establishments that did not return the classification form were coded later to those six-digit NAICS industries identified as “All other” industries within the given subsector.

As a result of these situations, a number of small establishments may have been misclassified by industry. However, such possible misclassification has no significant effect on the statistics other than on the number of companies and establishments.

The total establishment count for individual industries should be viewed as an approximation rather than a precise measurement. The counts for establishments with 20 employees or more are far more reliable than the count of total number of establishments.

2. Establishments sent a report form.

The establishments covered in the mail canvass were divided into three groups:

- a. ASM sample establishments.

This group accounts for approximately 15 percent of all manufacturing establishments. The ASM panel covers all the units of large manufacturing establishments as well as a sample of the medium and smaller establishments. The probability of selection was proportionate to size. For more information, see the Description of the ASM Survey Sample.

In an economic census year, the ASM report form (MA-1000) replaces the first page of the regular census form for those establishments included in the ASM. In addition to information on employment, payroll, and other items normally requested on the regular census form, establishments in the ASM sample were requested to supply additional information on gross book value of assets and capital expenditures. ASM establishments were also requested to provide information on retirements, depreciation, rental payments, and supplemental labor costs. For establishments not included in the ASM, these additional items were estimated using relationships observed in the ASM establishment data. The census statistics for these variables are a sum of the ASM establishment data and the estimated data for non-ASM establishments. ASM establishments were also requested to provide information for selected purchased services. The census statistics for the purchased service items were derived solely from the ASM establishments. See Appendix A, Explanation of Terms for an explanation of these items. The census part of the report form is 1 of 220 versions containing product, material, and special inquiries. The diversity of manufacturing activities necessitated the use of this many forms to canvass the 480 manufacturing industries. Each form was developed for a group of related industries.

Appearing on each form was a list of products primary to the group of related industries as well as secondary products and miscellaneous services that establishments classified in these industries were likely to perform. Respondents were requested to identify the products, the value of each product, and, in many cases, the quantity of the product shipped during the survey year. Space also was provided for the respondent to describe products not specifically identified on the form.

The report form also contained a materials-consumed inquiry which varied from form to form depending on the industries being canvassed. The respondents were asked to review a list of materials generally used in their production processes. From this list, each establishment was requested to identify those materials consumed during the survey year, the cost of each, and, in certain cases, the quantity consumed. Once again, space was provided for the respondent to describe significant materials not identified on the form.

A wide variety of special inquiries was included to measure activities peculiar to a given industry, such as operations performed and equipment used.

b. Large and medium establishments (non-ASM).

Approximately 30 percent of all manufacturing establishments were included in this group. A variable cutoff, based on administrative-record payroll data and determined on an industry-by-industry basis, was used to select those establishments that were to receive 1 of the 220 economic census – manufacturing regular forms. The first page, requesting establishment data for items such as employment and payroll, was standard but did not contain the detailed statistics included on the ASM form. The product, material, and special inquiry sections supplied were based on the historical industry classification of the establishment.

c. Small single-establishment companies (non-ASM).

This group includes approximately 15 percent of all manufacturing establishments. For those industries where application of the variable cutoff for administrative-record cases resulted in a large number of small establishments being included in the mail canvass, an abbreviated or short form was used. These establishments received 1 of the 31 versions of the short form, which requested summary product and material data and totals but no details on employment, payroll, cost of materials, inventories, and capital expenditures.

Use of the short form has no adverse effect on published totals for the industry statistics because the same data were collected on the short form as on the long form. However, detailed information on products and materials consumed was not collected on the short form; thus, its use would increase the value of the nsk categories.

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

Each of the establishments covered in the 1997 Economic Census – Manufacturing was classified in 1 of 480 industries (473 manufacturing industries and 7 former manufacturing industries) in accordance with the industry definitions in the 1997 NAICS Manual. This is the first edition of the NAICS Manual and it is a major change from the 1987 SIC Manual that was used previously. Appendix A of the 1997 NAICS Manual notes the comparability between the 1987 SIC and 1997 NAICS classification systems. When applicable, Appendix G of this report shows the product class and product comparability between the two systems for data in this report.

In the NAICS system, an industry is generally defined as a group of establishments that have similar production processes. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by manufacture, value of shipments, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the manufacturing sector for 1997, there are 21 subsectors (three-digit NAICS), 86 industry groups (four-digit NAICS), 184 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 473 U.S. industries (six-digit NAICS). This represents an expansion of the four-digit SIC-based U.S. industries from 459 in 1987. Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. In the new system, there are about 1,500 product classes (seven-digit codes), about 6,000 census products, and an additional 3,700 CIR products (ten-digit codes). The ten-digit products are considered the primary products of the industry with the same first six digits. These counts do not include the seven former manufacturing industries that are included in the 1997 Economic Census – Manufacturing.

For the 1997 Economic Census – Manufacturing, all establishments were classified in particular industries based on the products they produced. If an establishment made products of more than one industry, it was classified in the industry with the largest product value. For 1997, there were no “resistance rules” or “frozen industries.”

In ASM years, establishments included in the ASM sample with certainty weights are reclassified by industry only if the change in the primary activity from the prior year is significant or if the change has occurred for 2 successive years. This procedure prevents reclassification when there are minor shifts in product mix.

In ASM years, establishments included in the ASM sample with noncertainty weight are not shifted from one industry classification to another. They are retained in the industry where they were classified in the base census year. However, in the following census year, these ASM plants are allowed to shift from one industry to another.

The results of these rules covering the switching of plants from one industry classification to another are that some industries comprise different mixes of establishments in different survey years. Hence, comparisons between prior-year and current-year published totals, particularly at the six-digit NAICS level, should be viewed with caution. This is particularly true for the comparison between the data shown for a census year versus the data shown for the previous ASM year.

As previously noted, the small establishments that may have been misclassified by industry are usually administrative-record cases whose industry codes were assigned on the basis of incomplete descriptions of the general activity of the establishment. Such possible misclassifications have no significant effect on the statistics other than on the number of companies and establishments.

Establishments frequently make products classified both in their industry (primary products) and other industries (secondary products). Industry statistics (employment, payroll, value added by manufacture, value of shipments, etc.) reflect the activities of the establishments which may make both primary and secondary products. Product statistics, however, represent the output of all establishments without regard for the classification of the producing establishment. For this reason, when relating the industry statistics, especially the value of shipments, to the product statistics, the composition of the industry’s output should be considered.

The extent to which industry and product statistics may be matched with each other is measured by the primary product specialization ratio and the coverage ratio. The primary product specialization ratio is the proportion of industry shipments accounted for by the primary products of establishments classified in the industry. The coverage ratio is the proportion of product shipments accounted for by establishments classified in the industry.

## **ESTABLISHMENT BASIS OF REPORTING**

The economic census – manufacturing is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each location or establishment. The ASM also is conducted on an establishment basis, but separate reports are filed for just those establishments selected in the sample. Companies engaged in distinctly different lines of activity at one location are requested to submit separate reports if the plant records permit such a separation and if the activities are substantial in size.

In 1997, as in earlier years, a minimum size limit was set for inclusion of establishments in the census. All establishments employing one person or more at any time during the census year are included. The same size limitation has applied since 1947 in censuses and annual surveys of manufactures. In the 1939 and earlier censuses, establishments with less than \$5,000 value of products were excluded. The change in the minimum size limit in 1947 does not appreciably affect the historical comparability of the census figures except for data on number of establishments for a few industries.

The 1997 Economic Census – Manufacturing excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service manufacturing establishments of the same company. These data are published in a separate report series.

## **DESCRIPTION OF THE ASM SURVEY SAMPLE**

The annual survey of manufactures (ASM) sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1994 survey year based on the 1992 Census of Manufactures. This sample will be in place through the 1998 ASM.

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In 1992, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the 1992 manufacturing population was partitioned into two components for developing estimates within the ASM; a mail stratum and a nonmail stratum.

**Mail stratum.** The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies that operate at more than one physical location). Approximately 230,000 of the 370,000 establishments in the 1992 census were assigned to the mail stratum. On an annual basis, the mail stratum is supplemented with larger, newly active single-location companies identified from a list provided by the Internal Revenue Service (IRS) and new manufacturing locations of multiunit companies identified from the Census Bureau's Company Organization Survey (COS).

For the 1994 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1992 census. Supplemental samples representing both 1993 and 1994 births (newly active establishments that were not included in the 1992 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 1998.

The 1994-98 ASM sample design is similar to the one used since 1984. Companies in the 1992 Census of Manufactures with manufacturing shipments of at least \$500 million were defined as company certainties. For these large companies, each manufacturing establishment is included in the mail sample. For the 1994-98 sample, there are approximately 650 certainty companies collectively accounting for over 18,000 establishments.

For the remaining portion of the mail component of the survey, the establishment was defined as the sample unit. All establishments with 250 employees or more were defined as employment certainties. In addition, all establishments producing products in SIC 3571 (Electronic Computers) were defined as certainties. Across these three arbitrary certainty classes, there were approximately 25,000 establishments included in the sample with certainty. Collectively, these certainty establishments accounted for approximately 80 percent of the total value of shipments in the 1992 Census of Manufactures.

Smaller establishments in the remaining portion of the mail stratum were sampled with probabilities ranging from .02 to 1.00. The initial probabilities of selection assigned to these establishments were proportionate to a measure-of-size determined for each establishment. The measure-of-size was a function of the establishment's 1992 industry classification, its 1992 product class data, and the historical variability of the year-to-year estimates of the product class estimates. For each product class (1,755) and four-digit industry (459), a desired reliability

constraint was specified. Using a technique developed by Dr. James R. Chromy of the Research Triangle Institute, the initial establishment probabilities were optimized such that the expected sample satisfied all industry and product class reliability constraints while the sample size was minimized. This technique reduces the likelihood of selecting nonrepresentative samples for individual product classes or industries.

This method of assigning probabilities based on product class shipments is motivated by our primary desire to produce reliable estimates of both product class and industry shipments. The high correlation between shipments and employment, value-added, and other general statistics assures that these variables will also be well represented by the sample. The actual sample selection procedure uses an independent chance of selection method (Poisson sampling) which permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

**Nonmail component.** The initial nonmail component of the survey was comprised of approximately 140,000 small, single-establishment companies that were tabulated as administrative records in the 1992 Census of Manufactures. The nonmail stratum is also supplemented annually using the list of newly active single-location companies provided by the Internal Revenue Service (IRS) and payroll cutoffs. Companies with payroll below the payroll cutoff are added to the nonmail stratum. For this portion of the population, sampling is not used. The data for this group are estimated based on selected information obtained annually from the administrative records of the IRS and Social Security Administration (SSA). This administrative information, which includes payroll, total employment, industry classification, and physical location, is obtained under conditions which safeguard the confidentiality of both tax and census records.

## DESCRIPTION OF THE ASM ESTIMATING PROCEDURE

Most of the ASM estimates derived for the mail stratum are computed using a difference estimator. At the establishment level, there is a strong correlation between the current-year data values and the corresponding 1992 (base) data values. Therefore, within the mailed stratum, for each item at each level of aggregation, an estimate of the "difference" between the current year and the base year is computed from sample cases and added to the corresponding base-year values. For the 1993-1997 ASM estimates, the 1992 Census of Manufactures values serve as the base year. For the 1998 ASM, the base will be updated to be the 1997 Economic Census – Manufacturing.

Due to the positive year-to-year correlation, estimates derived using this methodology are generally more reliable than comparable estimates developed from the current sample data alone. Estimates for the capital expenditures variables are not generated using the difference

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estimator because the year-to-year correlations are considerably weaker. The standard linear estimator is used for these variables.

For the nonmail stratum, estimates for payroll and employment are directly tabulated from the administrative-record data provided by IRS and SSA. Estimates of data other than payroll and employment are developed from industry averages. Although the nonmail stratum contains approximately 170,000 individual establishments in 1994, it accounts for less than 2 percent of the estimate for total value of shipments at the total manufacturing level.

Corresponding estimates for the mail and nonmail components are combined to produce the estimates included in this publication.

### **QUALIFICATIONS OF THE ASM DATA**

The estimates developed from the sample are apt to differ somewhat from the results of a survey covering all companies in the sample lists but otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the ASM is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data for selected ASM statistics in this report. They are represented in the form of relative standard errors (the standard errors divided by the estimated values to which they refer).

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals (ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples).

The complete-coverage value would be included in the range:

From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.

From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.

From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable, complete-survey result would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection, reporting, coding, transcription, imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables in this publication having an associated standard error exceeding 15 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

### **DATA FROM THE CURRENT INDUSTRIAL REPORTS (CIR)**

The CIR program provides product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. When detail product data are collected in the CIR, they are not also collected in the census. However, the annual CIR data are included in the census Product Summary report.

The CIR program uses a unified data collection, processing, and publication system. The Census Bureau updates the survey panels for most reports annually and reconciles the estimates to the results of the broader-based annual survey of manufactures and the economic



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census – manufacturing. The economic census – manufacturing provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. Where a small number of producers exist, CIR surveys cover all known producers of a product. However, when the number of producers is large, cutoff and random sampling techniques are used. Surveys are continually reviewed and modified to provide the most up-to-date information on products produced. While the CIR program includes both mandatory and voluntary surveys, the annual data are mandatory.

#### **DUPLICATION IN COST OF MATERIALS AND VALUE OF SHIPMENTS**

Data for cost of materials and value of shipments include varying amounts of duplication, especially at higher levels of aggregation. This is because the products of one establishment may be the materials of another. The value added statistics avoid this duplication and are, for most purposes, the best measure for comparing the relative economic importance of industries and geographic areas.

#### **VALUE OF INDUSTRY SHIPMENTS COMPARED WITH VALUE OF PRODUCT SHIPMENTS**

The 1997 Economic Census – Manufacturing shows value of shipments data for industries and products. In the industry statistics tables and files, these data represent the total value of shipments of all establishments classified in a particular industry. The data include the shipments of the products classified in the industry (primary to the industry), products classified in other industries (secondary to the industry), and miscellaneous receipts (repair work, sale of scrap, research and development, installation receipts, and resales). Value of product shipments shown in the products statistics tables and files represent the total value of all products shipped that are classified as primary to an industry regardless of the classification of the producing establishment.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas

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Not applicable for this report.

# Appendix F. Footnotes for Products Statistics and Materials Consumed by Kind

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## Part 1. **Products Statistics (Tables 6a and 6b)**

NAICS product code	Footnote
@3324391 .....	For additional detail, see Current Industrial Report MA332K, Steel Shipping Drums and Pails.

## Part 2. **Materials Consumed by Kind (Table 7)**

Not applicable.

# Appendix G.

## Comparability of Product Classes and Product Codes:

### 1997 to 1992

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
33211111	34625	34625	3321165281	3469989	3469989	3322127 pt.	37999 pt.	37999 pt.
3321111101	3462511	3462511	3321165291	3469997	3469997	3322127101	3423611	3423611
332111206	3462513	3462513	3321165361	3469971	3469971	3322127111	3423621	3423621
332111311	3462515	3462515	3321165YVW	3469900	3469900	3322127116	3423631	3423631
332111416	3462517	3462517	3321166W	34690 pt.	34690 pt.	3322127121	3423641	3423641
332111YVW	3462500	3462500	3321166WYVW	3469000 pt.	3469000 pt.	3322127131	3423681	3423681
3321113	34626	34626	3321166YVW	3469002 pt.	3469002 pt.	3322127136	3423685	3423685
3321113101	3462611	3462611	3321170 pt.	34990 pt.	34990 pt.	3322127141	3799906	3799923 pt.
3321113106	3462613	3462613	3321170 pt.	34990 pt.	34990 pt.	3322127199	3423698	3423698
3321113111	3462616	3462616	3321170 pt.	34990 pt.	34990 pt.	3322127226	3524101	3524100 pt.
3321113YVW	3462600	3462600	3321170 pt.	34996	34996	3322127YVW pt.	3423600	3423600
3321115	34627	34627	3321170106	3499633	3499633	3322127YVW pt.	3524100 pt.	3524100 pt.
3321115101	3462712	3462712	3321170211	3499655	3499655	3322127YVW pt.	3799900 pt.	3799900 pt.
3321115106	3462716	3462716	3321170321	3499677	3499677	3322129 pt.	35455	35455
3321115YVW	3462700	3462700	3321170401	3499611	3499611	3322129 pt.	35455	35455
3321117	34628	34628	3321170416	3499666	3499666	3322129 pt.	36992 pt.	36992 pt.
3321117101	3462812	3462812	3321170426	3499688	3499688	3322129101	3545511	3545511
3321117106	3462816	3462816	3321170YVW pt.	3499000 pt.	3499000 pt.	3322129106	3545513	3545513
3321117YVW	3462800	3462800	3321170YVW pt.	3499600	3499600	3322129111	3545515	3545515
332111W	34620	34620	3321170YVW pt.	3499002 pt.	3499002 pt.	3322129116	3545517	3545517
332111WYVW	3462000	3462000	3322111 pt.	39141 pt.	39141 pt.	3322129121	3545521	3545521
332111YVW	3462002	3462002	3322111 pt.	39142 pt.	39142 pt.	3322129126	3545561	3545561
3321121	34635	34635	332211101	3421111	3421111	3322129131	3545565	3545565
3321121101	3463521	3463521	3322111103	3914245	3914270 pt.	3322129146	3545577	3545577
3321121206	3463523	3463523	3322111106	3914155	3914170 pt.	3322129161	3699255	3699200 pt.
3321121311	3463525	3463525	3322112121	3421125	3421125	3322129236	3545571	3545571
3321121316	3463529	3463529	332211222	3421130	3421130	3322129341	3545573	3545573
3321121YVW	3463500	3463500	332211326	3421153	3421153	3322129451	3545579	3545579
3321122	34639	34639	332211331	3421155	3421155	3322129YVW pt.	3545500	3545500
3321122101	3463915	3463915	332211336	3421157	3421157	3322129YVW pt.	3699200 pt.	3699200 pt.
3321122106	3463925	3463925	332211344	3421159	3421159	3322129YVW pt.	3545579	3545579
3321122111	3463935	3463935	332211355	3421180	3421180	3322129YVW pt.	3545500	3545500
3321122YVW	3463900	3463900	332211372	3421100	3421100	3322129YVW pt.	3699200 pt.	3699200 pt.
332112W	34630	34630	332211381	3421153	3421153	332212W pt.	34230	34230
332112WYVW	3463000	3463000	332211386	3421157	3421157	332212W pt.	35230 pt.	35230 pt.
332112YVW	3463002	3463002	332211394	3421159	3421159	332212W pt.	35240 pt.	35240 pt.
3321140 pt.	34490 pt.	34490 pt.	332211445	3421180	3421180	332212W pt.	35450 pt.	35450 pt.
3321140101	3449811	3449811	332211455	3421100	3421100	332212W pt.	36990 pt.	36990 pt.
3321140206	3449813	3449813	332211484	3421100	3421100	332212W pt.	37990 pt.	37990 pt.
3321140311	3449815	3449815	332211490	3421100	3421100	332212W pt.	39990 pt.	39990 pt.
3321140416	3449817	3449817	332211522	3421100	3421100	332212WYVW pt.	3423000	3423000
3321140YVW pt.	3449000 pt.	3449000 pt.	332211536	3421153	3421153	332212WYVW pt.	3523000 pt.	3523000 pt.
3321140YVW pt.	3449800	3449800	332211561	3421155	3421155	332212WYVW pt.	3524000 pt.	3524000 pt.
3321140YVW pt.	3449002 pt.	3449002 pt.	332211565	3421155	3421155	332212WYVW pt.	3545000 pt.	3545000 pt.
3321150 pt.	34660	34660	332211565	3421155	3421155	332212WYVW pt.	3699000 pt.	3699000 pt.
3321150 pt.	34661	34661	332211565	3421155	3421155	332212WYVW pt.	3799000 pt.	3799000 pt.
3321150101	3466105	3466105	332211565	3421155	3421155	332212WYVW pt.	3999000 pt.	3999000 pt.
3321150103 pt.	3466200 pt.	3466200	332211565	3421155	3421155	332212WYVW pt.	3423002	3423002
3321150103 pt.	3466200 pt.	3466230	332211565	3421155	3421155	332212WYVW pt.	3523002 pt.	3523002 pt.
3321150103 pt.	3466200 pt.	3466232	332211565	3421155	3421155	332212WYVW pt.	3524002 pt.	3524002 pt.
3321150106 pt.	3466123 pt.	3466120	332211565	3421155	3421155	332212WYVW pt.	3545002 pt.	3545002 pt.
3321150106 pt.	3466123 pt.	3466122	332211565	3421155	3421155	332212WYVW pt.	3699002 pt.	3699002 pt.
3321150YVW pt.	3466000	3466000	332211565	3421155	3421155	332212WYVW pt.	3799002 pt.	3799002 pt.
3321150YVW pt.	3466100	3466100	332211565	3421155	3421155	332212WYVW pt.	3999002 pt.	3999002 pt.
3321150YVW pt.	3466002	3466002	332211565	3421155	3421155	3322130	34250	34250
3321161	34692	34692	332211565	3421155	3421155	3322130101	3425011	3425011
3321161101	3469201	3469201	332211565	3421155	3421155	3322130106	3425013	3425013
3321161115	3469215	3469215	332211565	3421155	3421155	3322130111	3425016	3425016
3321161205	3469205	3469205	332211565	3421155	3421155	3322130116	3425018	3425018
3321161311	3469211	3469211	332211565	3421155	3421155	3322130122	3425019	3425019
3321161331	3469231	3469231	332211565	3421155	3421155	3322130226	3425031	3425031
3321161352	3469252	3469252	332211565	3421155	3421155	3322130231	3425035	3425035
3321161354	3469253	3469253	332211565	3421155	3421155	3322130236	3425036	3425036
3321161388	3469288	3469288	332211565	3421155	3421155	3322130244	3425039	3425039
3321161398	3469298	3469298	332211565	3421155	3421155	3322130255	3425041	3425041
3321161421	3469220	3469220	332211565	3421155	3421155	3322130361	3425043	3425043
3321161441	3469241	3469241	332211565	3421155	3421155	3322130365	3425045	3425045
3321161525	3469225	3469225	332211565	3421155	3421155	3322130377	3425049	3425049
3321161561	3469261	3469261	332211565	3421155	3421155	3322130YVW	3425000	3425000
3321161571	3469271	3469271	332211565	3421155	3421155	3322130YVW	3425002	3425002
3321161574	3469284	3469284	332211565	3421155	3421155	3322141	34694	34694
3321161YVW	3469200	3469200	332211565	3421155	3421155	332214111	3469411	3469411
3321163	34696	34696	332211565	3421155	3421155	3322141221	3469414	3469414
3321163100	3469600	3469600	332211565	3421155	3421155	3322141231	3469417	3469417
3321165	34699	34699	332211565	3421155	3421155	3322141241	3469429	3469429
3321165101	3469941	3469941	332211565	3421155	3421155	3322141YVW	3469400	3469400
3321165211	3469948	3469948	332211565	3421155	3421155	3322143	34695	34695
3321165221	3469951	3469951	332211565	3421155	3421155	3322143101	3469507	3469507
3321165231	3469959	3469959	332211565	3421155	3421155	3322143211	3469509	3469509
3321165241	3469961	3469961	332211565	3421155	3421155	3322143221	3469515	3469515
3321165251	3469969	3469969	332211565	3421155	3421155	3322143231 pt.	3469525 pt.	3469521
3321165271	3469985	3469985	332211565	3421155	3421155	3322143231 pt.	3469525 pt.	3469524
			332211565	3421155	3421155	3322143241 pt.	3469599 pt.	3469527
			332211565	3421155	3421155	3322143241 pt.	3469599 pt.	3469527
			332211565	3421155	3421155	3322143YVW	3469500	3469500
			332211565	3421155	3421155	332214W	34690 pt.	34690 pt.
			332211565	3421155	3421155	332214WYVW	3469000 pt.	3469000 pt.
			332211565	3421155	3421155	332214WYVW	3469002 pt.	3469002 pt.

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3323111	34481	34481	332312321	3442298	3442298	3323233YVW pt	3446200	3446200
332311106	3448117	3448117	332321306	3442221	3442221	3323233YVW pt	3449600	3449600
332311111	3448118	3448118	3323213YVW	3442200	3442200			
332311201	3448115	3448115				3323235	34463	34463
332311YVW	3448100	3448100	3323215 pt	24991 pt	24991 pt	3323235101	3446310	3446310
			3323215 pt	34423	34423	3323235106	3446312	3446312
3323113	34482	34482	3323215 pt	34497	34497	3323235211	3446320	3446320
332311301	3448211	3448211	332321501 pt	3442321	3442321	3323235216	3446322	3446322
332311306	3448214	3448214	332321501 pt	3449773	3449773	3323235YVW	3446300	3446300
332311311	3448215	3448215	332321506 pt	2499141	2499141			
3323113216	3448216	3448216	332321506 pt	3442325	3442325			
3323113221	3448217	3448217	332321506 pt	3449775	3449775			
3323113226	3448218	3448218	3323215111 pt	3442351	3442351			
3323113231	3448226	3448226	3323215111 pt	3449779	3449779			
3323113236	3448227	3448227	3323215YVW pt	2499100 pt	2499100 pt			
3323113241	3448254	3448254	3323215YVW pt	3442300	3442300			
3323113YVW	3448200	3448200	3323215YVW pt	3449700	3449700			
						3323239 pt	34465	34465
3323114W	34480	34480				3323239 pt	3523E pt	3523E pt
3323114YVW	3448000	3448000	3323217	34424	34424	3323239106	3446512	3446512
3323114YVW	3448002	3448002	332321701	3442411	3442411	3323239111	3446530	3446530
			3323217106	3442412	3442412	3323239201	3446510	3446510
33232121 pt	34411	34411	3323217111	3442413	3442413	3323239311	3523E84	3523E00 pt
			3323217YVW	3442400	3442400	3323239YVW pt	3446500	3446500
						3323239YVW pt	3523E00 pt	3523E00 pt
33232121 pt	34494	34494						
3323212101 pt	3441141	3441141	3323219	34425	34425			
3323212101 pt	3449443	3449443	3323219101	3442511	3442511			
33232121206 pt	3441142	3441142	3323219106	3442512	3442512			
33232121206 pt	3449447	3449447	3323219111	3442551	3442551			
33232121211 pt	3441143	3441143	3323219YVW	3442500	3442500			
33232121211 pt	3449452	3449452						
33232121216	3441144	3441144	332321W pt	24990 pt	24990 pt			
33232121221	3441146	3441146	332321W pt	34420	34420			
33232121226	3441147	3441147						
33232121231	3441171	3441171	332321W pt	34490 pt	34490 pt			
33232121YVW pt	3441100	3441100	332321WYVW pt	2499000 pt	2499000 pt			
33232121YVW pt	3449400	3449400	332321WYVW pt	3442000	3442000			
			332321WYVW pt	3449000 pt	3449000 pt			
33232123	34412	34412	332321WYVW pt	2499002 pt	2499002 pt			
33232123100	3441200	3441200	332321WYVW pt	3442002	3442002			
			332321WYVW pt	3449002 pt	3449002 pt			
3323125	34413	34413						
3323125106	3441320	3441320	3323221	34441	34441			
3323125111	3441323	3441323	3323221101	3444121	3444121			
3323125116	3441326	3441326	3323221106	3444123	3444123			
3323125121	3441329	3441329	3323221211	3444127	3444127			
3323125126	3441359	3441359	3323221216	3444129	3444129			
3323125131	3441384	3441384	3323221211	3444110	3444110			
3323125136	3441398	3441398						
3323125201	3441316	3441316	3323223	34442	34442			
3323125YVW	3441300	3441300	3323223101	3444213	3444213			
			3323223106	3444215	3444215			
3323212W pt	34410	34410	3323223111	3444219	3444219			
			3323223YVW	3444200	3444200			
3323212W pt	34490 pt	34490 pt						
3323212YVW pt	3441000	3441000	3323227	34444	34444			
3323212YVW pt	3449000 pt	3449000 pt	3323227101	3444411	3444411			
3323212YVW pt	3441002	3441002	3323227206	3444417	3444417			
3323212YVW pt	3449002 pt	3449002 pt	3323227211	3444423	3444423			
			3323227216	3444429	3444429			
3323130 pt	34430 pt	34430 pt	3323227221	3444431	3444431			
			3323227YVW	3444400	3444400			
3323130 pt	34432 pt	34432 pt						
3323130111	3443244	3443244	3323229	34445	34445			
3323130116	3443246	3443246	3323229106	3444516	3444516			
3323130121	3443248	3443248	3323229111	3444517	3444517			
3323130226	3443252	3443252	3323229116	3444518	3444518			
3323130231	3443254	3443254	3323229121	3444519	3444519			
3323130236	3443256	3443256	3323229201	3444505	3444505			
3323130301	3443221	3443221	3323229YVW	3444500	3444500			
3323130346	3443299	3443298 pt						
3323130406	3443236	3443236						
3323130YVW pt	3443000 pt	3443000 pt	332322A	34447	34447			
3323130YVW pt	3443200	3443200	332322A101	3444721	3444721			
3323130YVW	3443002 pt	3443002 pt	332322A106	3444725	3444725			
			332322A111	3444731	3444731			
3323211	34421	34421	332322A116	3444741	3444741			
3323211110	3442111	3442111	332322AYVW	3444700	3444700			
3323211113	3442116	3442116						
3323211116	3442119	3442119						
3323211119	3442121	3442121	332322C	34448	34448			
3323211201	3442105	3442105	332322C101	3444811	3444811			
3323211204	3442107	3442107	332322C206	3444813	3444813			
3323211207	3442109	3442109	332322C311	3444819	3444819			
3323211222	3442122	3442122	332322CYVW	3444800	3444800			
3323211225	3442123	3442123						
3323211328	3442124	3442124						
3323211331	3442125	3442125	332322E	34449	34449			
3323211334	3442126	3442126	332322E101	3444931	3444931			
3323211440	3442128	3442128	332322E106	3444941	3444941			
3323211443	3442130	3442130	332322E211	3444953	3444953			
3323211446	3442131	3442131	332322E321	3444955	3444955			
3323211549	3442132	3442132	332322E326	3444962	3444962			
3323211552	3442134	3442134	332322E331	3444965	3444965			
3323211555	3442136	3442136	332322E336	3444998	3444998			
3323211661	3442142	3442142	332322EYVW	3444900	3444900			
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3323211837	3442127	3442127						
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			3323231106	3446112	3446112			
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3323213241	3442243	3442243	3323233106 pt	3446212	3446212			
3323213246	3442249	3442249	3323233106 pt	3449632	3449632			
			3323233211	3446220	3446220			
			3323233216	3446222	3446222			
			3323233221	3446226	3446226			

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
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3329115	34913	34913	332912WYVWV pt	3492002	3492002	3329911000	3562100	3562100
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332911D105	3491715	3491715	3329137106	3432305	3432305	3329943	34842	34842
332911D107	3491727	3491727	3329137111	3432311	3432311	3329943101	3484211	3484211
332911D109	3491731	3491731	3329137116 pt	3432315 pt	3432314	3329943206	3484213	3484213
332911D111	3491739	3491739	3329137116 pt	3432315 pt	3432317	3329943311	3484216	3484216
332911D213	3491798	3491798	3329137121 pt	3432321 pt	3432320	3329943311	3484216	3484216
332911DYVW	3491700	3491700	3329137121 pt	3432321 pt	3432323	3329943416	3484221	3484221
332911F	34918	34918	3329137131	3432327	3432327	3329943421	3484223	3484223
332911F100	3491800	3491800	3329137131	3432327	3432327	3329943426	3484226	3484226
332911H	34919	34919	3329137141 pt	3432331 pt	3432308	3329943431	3484254	3484254
332911H100	3491900	3491900	3329137141 pt	3432331 pt	3432332 pt	3329943536	3484265	3484265
332911W	34910	34910	3329137224	3432324	3432325 pt	3329943541	3484274	3484274
332911WYVW	3491000	3491000	3329137226	3432326	3432325 pt	3329943546	3484281	3484281
332911WYVW	3491002	3491002	3329137YVW	3432300 pt	3432300 pt	3329943YVW	3484200	3484200
3329121 pt	3492A	3492A	332913W	34320 pt	34320 pt	3329944	34840	34840
3329121 pt	37284 pt	37284 pt	332913WYVW	3432000 pt	3432000 pt	3329944YVW	3484000	3484000
3329121100 pt	3492A00	3492A00	332913WYVW	3432002 pt	3432002 pt	3329944YVW	3484002	3484002
3329121100 pt	3728400 pt	3728400 pt	3329191 pt	34944	34944	3329951	34891	34891
3329121100 pt	3728403 pt	3728473 pt	3329191 pt	34998 pt	34998 pt	3329951106	3489121	3489121
3329121100 pt	3728401 pt	3728475 pt	3329191101 pt	3494421	3494421	3329951111	3489151	3489151
3329123 pt	3492B	3492B	3329191101 pt	3499831	3499831	3329951116	3489171	3489171
3329123 pt	37284 pt	37284 pt	3329191203	3494431	3494431	3329951YVW	3489100	3489100
3329123100 pt	3492B00	3492B00	3329191205	3494441	3494441	3329952	34892	34892
3329123100 pt	3728400 pt	3728400 pt	3329191207	3494451	3494451	3329952100	3489200	3489200
3329123100 pt	3728402 pt	3728483 pt	3329191209	3494499	3494499	3329955	34890	34890
3329123100 pt	3728402 pt	3728485 pt	3329191YVW pt	3494400	3494400	3329955WYVW	3489000	3489000
3329125	3492C	3492C	3329191YVW pt	3499800 pt	3499800 pt	3329955WYVW	3489002	3489002
3329125100	3492C00	3492C00	3329193 pt	34298 pt	34298 pt	3329961	33534	33534
3329127	3492D	3492D	3329193 pt	34945 pt	34945 pt	3329961100	3353400	3353400
3329127100	3492D00	3492D00	3329193101	3494511	3494511	3329963	34980	34980
3329129	3492E	3492E	3329193103	3494512	3494512	3329963101	3498013	3498013
3329129100	3492E00	3492E00	3329193105	3494513	3494513	3329963203	3498015	3498015
332912B	3492F	3492F	3329193107	3494514	3494514	3329963205	3498017	3498017
332912B100	3492F00	3492F00	3329193109	3494515	3494515	3329963207	3498019	3498019
332912D	3492G	3492G	3329193111	3494516	3494516	3329963YVW	3498000 pt	3498000 pt
332912D100	3492G00	3492G00	3329193113	3494517	3494517	3329966W	33530 pt	33530 pt
332912F pt	3492H	3492H	3329193115	3494518	3494518	3329966WYVW pt	3353000 pt	3353000 pt
332912F pt	37284 pt	37284 pt	3329193217	3494519	3494519	3329966WYVW pt	3498000 pt	3498000 pt
332912F100 pt	3492H00	3492H00	3329193319	3494521	3494521	3329966WYVW pt	3353002 pt	3353002 pt
332912F100 pt	3728400 pt	3728400 pt	3329193321	3494523	3494523	3329966WYVW pt	3498002	3498002
332912F100 pt	3728403 pt	3728473 pt	3329193323	3494524	3494524	3329970	35430	35430
332912F100 pt	3728403 pt	3728475 pt	3329193325	3494534	3494534	3329970101	3543011	3543011
332912F100 pt	3728403 pt	3728483 pt	3329193327	3494537	3494537	3329970206	3543098	3543098
332912F100 pt	3728403 pt	3728485 pt	3329193329	3494542	3494542	3329970YVW	3543000	3543000
332912H	3492J	3492J	3329193331	3494544	3494544	3329970YVW	3543002	3543002
332912H100	3492J00	3492J00	3329193333	3494547	3494547	3329980	34310	34310
332912J	3492K	3492K	3329193335	3494585	3494585	3329980110	3431010	3431010
332912J100	3492K00	3492K00	3329193336	3429862	3429862	3329980290	3431098	3431098
			3329193337	3494599	3494599	3329980YVW	3431000	3431000
			3329193YVW pt	3429800 pt	3429800 pt	3329980YVW	3431002	3431002
			3329193YVW pt	3494500 pt	3494500 pt			
			332919W pt	34290 pt	34290 pt			



1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3329991	34971	34971	332999AYWV	3499500	3499500	332999GYWV pt...	3999900 pt	3999900 pt
3329991101	3497132	3497132	332999G pt	32918 pt	32918 pt	332999W pt	32910 pt	32910 pt
3329991106	3497133	3497133	332999G pt	34323 pt	34323 pt	332999W pt	34320 pt	34320 pt
3329991111	3497137	3497137	332999G pt	34945 pt	34945 pt	332999W pt	34940 pt	34940 pt
3329991YWV	3497100	3497100	332999G pt	34998 pt	34998 pt	332999W pt	34970 pt	34970 pt
3329993	34973	34973	332999G pt	34998 pt	34998 pt	332999W pt	34990 pt	34990 pt
3329993101	3497352	3497352	332999G pt	35373 pt	35373 pt	332999W pt	35370 pt	35370 pt
3329993106	3497354	3497354	332999G pt	39999 pt	39999 pt	332999W pt	35990 pt	35990 pt
3329993111	3497358	3497358	332999G101	3499811	3499811	332999WYWWW pt...	3291000 pt	3291000 pt
3329993YWV	3497300	3497300	332999G106	3499819	3499819	332999WYWWW pt...	3432000 pt	3432000 pt
3329994	35994 pt	35994 pt	332999G189	3494571	3494571	332999WYWWW pt...	3494000 pt	3494000 pt
3329994101	3599411	3599411	332999G301	3499829	3499829	332999WYWWW pt...	3497000 pt	3497000 pt
3329994106	3599413	3599413	332999G303	3499839	3499839	332999WYWWW pt...	3499000 pt	3499000 pt
3329994111	3599415	3599415	332999G305	3537331	3537331	332999WYWWW pt...	3537000 pt	3537000 pt
3329994116	3599416	3599416	332999G306 pt	3999991 pt	3999991 pt	332999WYWWW pt...	3599000 pt	3599000 pt
3329994121	3599425	3599425	332999G306 pt	3999991 pt	3999991 pt	332999WYWWW pt...	3999000 pt	3999000 pt
3329994YWV	3599400 pt	3599400 pt	332999G306 pt	3999999 pt	3999999 pt	332999WYWY pt...	3291002 pt	3291002 pt
3329997	34992	34992	332999G313	3291831	3291831	332999WYWY pt...	3432002 pt	3432002 pt
3329997101	3499211	3499211	332999G316	3291835	3291835	332999WYWY pt...	3494002 pt	3494002 pt
3329997106	3499213	3499213	332999G399 pt	3432329	3432329	332999WYWY pt...	3497002 pt	3497002 pt
3329997YWV	3499200	3499200	332999G399 pt	3499898	3499898	332999WYWY pt...	3499002 pt	3499002 pt
3329999	34993	34993	332999GYWV pt...	3291800 pt	3291800 pt	332999WYWY pt...	3537002 pt	3537002 pt
3329999100	3499300	3499300	332999GYWV pt...	3432300 pt	3432300 pt	332999WYWY pt...	3599002 pt	3599002 pt
332999A	34995	34995	332999GYWV pt...	3499800 pt	3499800 pt	332999WYWY pt...	3999002 pt	3999002 pt
332999A101	3499511	3499511	332999GYWV pt...	3537300 pt	3537300 pt			
332999A106	3499521	3499521						
332999A111	3499531	3499531						
332999A116	3499539	3499539						

