

Rolling Mill Machinery and Equipment Manufacturing

1997

Issued October 1999

EC97M-3335F(RV)

1997 Economic Census

Manufacturing

Industry Series



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-- Not applicable for this report.

Introduction to the Economic Census

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

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) 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.

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. 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.

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

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 ¹	All estab-lish-ments ²	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)				
333516	Rolling mill machinery & equipment mfg	98	100	4 149	167 312	2 210	4 720	75 166	363 586	323 460	700 084	17 278
354700	Rolling mill machinery	N	100	4 149	167 312	2 210	4 720	75 166	363 586	323 460	700 084	17 278

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

²Includes 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 ¹	Total	With 20 em-ploy-ees or more	Number	Payroll (\$1,000)	Number	Hours (1,000)	Wages (\$1,000)				
333516, ROLLING MILL MACHINERY & EQUIPMENT MFG												
United States	2	100	40	4 149	167 312	2 210	4 720	75 166	363 586	323 460	700 084	17 278
Illinois	1	9	3	191	6 434	127	280	4 074	11 070	8 295	19 251	2 211
Michigan	-	8	3	270	11 232	188	427	7 517	18 265	19 181	40 211	444
Ohio	-	18	10	867	35 857	434	994	14 732	63 117	72 285	157 353	3 853
Pennsylvania	1	16	7	782	31 114	378	790	12 806	92 658	79 061	177 530	1 918

* 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.

¹Some 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
333516, ROLLING MILL MACHINERY & EQUIPMENT MFG		333516, ROLLING MILL MACHINERY & EQUIPMENT MFG—Con.	
Companies ¹	number.. 98	Value added	\$1,000.. 363 586
All establishments	number.. 100	Total inventories, beginning of year	\$1,000.. 167 611
Establishments with 1 to 19 employees	number.. 60	Finished goods inventories, beginning of year	\$1,000.. 17 418
Establishments with 20 to 99 employees	number.. 30	Work-in-process inventories, beginning of year	\$1,000.. 134 993
Establishments with 100 employees or more	number.. 10	Materials and supplies inventories, beginning of year	\$1,000.. 15 200
All employees	number.. 4 149	Total inventories, end of year	\$1,000.. 178 736
Total compensation ²	\$1,000.. 206 589	Finished goods inventories, end of year	\$1,000.. 17 657
Annual payroll	\$1,000.. 167 312	Work-in-process inventories, end of year	\$1,000.. 121 716
Total fringe benefits	\$1,000.. 39 277	Materials and supplies inventories, end of year	\$1,000.. 39 363
Production workers, average for year	number.. 2 210	Gross book value of total assets at beginning of year	\$1,000.. 215 869
Production workers on March 12	number.. 2 193	Total capital expenditures (new and used)	\$1,000.. 17 278
Production workers on May 12	number.. 2 207	Capital expenditures for buildings and other structures (new and used)	\$1,000.. 2 236
Production workers on August 12	number.. 2 211	Capital expenditures for machinery and equipment (new and used)	\$1,000.. 15 042
Production workers on November 12	number.. 2 229	Total retirements ²	\$1,000.. 2 566
Production-worker hours	1,000.. 4 720	Gross book value of total assets at end of year	\$1,000.. 230 581
Production-worker wages	\$1,000.. 75 166	Total depreciation during year ²	\$1,000.. 14 900
Total cost of materials	\$1,000.. 323 460	Total rental payments ²	\$1,000.. 5 056
Cost of materials, parts, containers, etc., consumed	\$1,000.. 298 183	Buildings and other structures rental payments ²	\$1,000.. 2 344
Cost of resales	\$1,000.. 3 442	Machinery and equipment rental payments ²	\$1,000.. 2 712
Cost of fuels	\$1,000.. 2 694	Cost of purchased services for the repair of buildings and other structures ³	\$1,000.. 1 031
Cost of purchased electricity	\$1,000.. 7 299	Response coverage ratio ⁴	percent.. 70
Cost of contract work	\$1,000.. 11 842	Cost of purchased services for the repair of machinery and equipment ³	\$1,000.. 3 242
Quantity of electricity purchased for heat and power	1,000 kWh.. 123 163	Response coverage ratio ⁴	percent.. 70
Quantity of electricity generated less sold for heat and power	1,000 kWh.. —	Cost of purchased communications services ³	\$1,000.. 2 077
Total value of shipments	\$1,000.. 700 084	Response coverage ratio ⁴	percent.. 70
Primary products value of shipments	\$1,000.. 609 422	Cost of purchased legal services ³	\$1,000.. 1 560
Secondary products value of shipments	\$1,000.. 33 075	Response coverage ratio ⁴	percent.. 70
Total miscellaneous receipts	\$1,000.. 57 587	Cost of purchased accounting and bookkeeping services ³	\$1,000.. 1 309
Value of resales	\$1,000.. D	Response coverage ratio ⁴	percent.. 70
Contract receipts	\$1,000.. 10 474	Cost of purchased advertising services ³	\$1,000.. 2 363
Other miscellaneous receipts	\$1,000.. D	Response coverage ratio ⁴	percent.. 70
Primary products specialization ratio	percent.. 94	Cost of purchased software and other data processing services ³	\$1,000.. 1 248
Value of primary products shipments made in all industries	\$1,000.. 663 179	Response coverage ratio ⁴	percent.. 70
Value of primary products shipments made in this industry	\$1,000.. 609 422	Cost of purchased refuse removal (including hazardous waste) services ³	\$1,000.. 390
Value of primary products shipments made in other industries	\$1,000.. 53 757	Response coverage ratio ⁴	percent.. 70
Coverage ratio	percent.. 91		

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

²These 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.

³Based on ASM sample data.

⁴A 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 ¹	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)				
333516, ROLLING MILL MACHINERY & EQUIPMENT MFG												
All establishments	2	100	40	4 149	167 312	2 210	4 720	75 166	363 586	323 460	700 084	17 278
Establishments with 1 to 4 employees	9	30	—	79	2 057	57	101	1 497	3 785	3 126	6 903	154
Establishments with 5 to 9 employees	7	14	—	100	2 982	65	127	1 851	5 667	4 865	10 586	285
Establishments with 10 to 19 employees	5	16	—	216	6 476	141	284	4 088	13 645	9 421	22 706	399
Establishments with 20 to 49 employees	2	19	19	644	21 315	433	884	12 682	35 588	24 064	56 723	1 170
Establishments with 50 to 99 employees	1	11	11	707	28 839	435	973	15 428	48 033	61 698	132 071	5 745
Establishments with 100 to 249 employees	—	6	6	785	34 167	537	1 207	21 421	80 175	65 377	150 225	4 058
Establishments with 250 to 499 employees	—	3	3	D	D	D	D	D	D	D	D	D
Establishments with 500 to 999 employees	9	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 ²	9	48	—	260	7 032	180	328	4 937	12 815	10 614	23 435	520

¹Some 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.

²Some 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)				
333516	Rolling mill machinery & equipment mfg	100	4 149	167 312	2 210	4 720	75 166	363 586	323 460	700 084	17 278
3335161	Hot rolling mill machinery (including combination hot and cold) (except tube rolling)	6	1 095	48 002	393	788	12 635	134 414	111 872	252 176	1 884
3335163	Cold rolling mill machinery	7	815	34 225	415	920	15 519	58 559	58 903	104 414	5 001
3335165	Other rolling mill machinery (including tube mill machinery) and parts for all rolling mill machinery	33	1 783	72 731	1 075	2 390	38 386	146 215	134 971	302 814	9 623

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)
333516	Rolling mill machinery	N	X	X	663 179	N	X	X	436 527
3335161	Hot rolling mill machinery (including combination hot and cold) (except tube rolling)	N	X	X	180 328	N	X	X	147 287
33351611	Hot rolling mill machinery (including combination hot and cold) (except tube rolling)	N	X	X	180 328	N	N	N	N
3335161101	Blooming, slabbing, plate rolling (except tin plate), and hot strip mill machinery	2	X	X	D	N	N	N	N
3335161191	Other hot rolling mill machinery and equipment (including hot and cold) (except tube rolling)	7	X	X	D	8	X	X	91 829
3335161Y	Hot rolling mill machinery (including combination hot and cold) (except tube rolling), nsk	N	X	X	-	N	N	N	N
3335161YWV	Hot rolling mill machinery (including combination hot and cold) (except tube rolling), nsk	N	X	X	-	N	X	X	-
3335163	Cold rolling mill machinery	N	X	X	94 341	N	X	X	66 868
33351631	Cold rolling mill machinery	N	X	X	94 341	N	N	N	N
3335163101	Tandem cold rolling mill machinery	6	X	X	20 180	5	X	X	10 872
3335163106	Single stand cold rolling mill machinery	5	X	X	60 056	6	X	X	36 737
3335163191	Other cold rolling mill machinery and equipment	7	X	X	14 105	N	N	N	N
3335163Y	Cold rolling mill machinery, nsk	N	X	X	-	N	N	N	N
3335163YWV	Cold rolling mill machinery, nsk	N	X	X	-	N	X	X	1 332
3335165	Other rolling mill machinery (including tube mill machinery) and parts for all rolling mill machinery	N	X	X	347 302	N	X	X	181 031
33351651	Other rolling mill machinery (including tube mill machinery) and parts for all rolling mill machinery	N	X	X	346 099	N	N	N	N
3335165101	Tube rolling mill machinery	9	X	X	76 036	8	X	X	25 363
3335165106	Precessing lines (including pickling and cleaning, tinning, galvanizing, etc.), scarfing units, and press feed lines	6	X	X	70 311	N	N	N	N
3335165111	Other rolling mill machinery and equipment, except parts	12	X	X	46 134	6	X	X	N
3335165116	Machined rolls for rolling mills	19	X	X	108 537	17	X	X	90 800
3335165121	Parts, except rolls, for rolling mill machinery (sold separately)	15	X	X	45 081	15	X	X	29 241
3335165Y	Other rolling mill machinery (including tube mill machinery) and parts for all rolling mill machinery, nsk	N	X	X	1 203	N	N	N	N
3335165YWV	Other rolling mill machinery (including tube mill machinery) and parts for all rolling mill machinery, nsk	N	X	X	1 203	N	X	X	10 746
333516W	Rolling mill machinery, nsk, total	N	X	X	41 208	N	X	X	41 341
333516WY	Rolling mill machinery, nsk, total	N	X	X	41 208	N	N	N	N
333516WYWW	Rolling mill machinery, nsk, for nonadministrative-record establishments	N	X	X	17 858	N	X	X	32 200
333516WYWY	Rolling mill machinery, nsk, for administrative-record establishments	N	X	X	23 350	N	X	X	9 141

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
3335161	HOT ROLLING MILL MACHINERY (INCLUDING COMBINATION HOT AND COLD) (EXCEPT TUBE ROLLING)		
	United States	180 328	147 287
3335163	COLD ROLLING MILL MACHINERY		
	United States	94 341	66 868
	Ohio	18 852	12 223
	Pennsylvania	8 028	N
3335165	OTHER ROLLING MILL MACHINERY (INCLUDING TUBE MILL MACHINERY) AND PARTS FOR ALL ROLLING MILL MACHINERY		
	United States	347 302	181 031
	Illinois	16 186	16 829
	Michigan	6 961	N
	Ohio	151 135	93 889

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.

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)
333516	ROLLING MILL MACHINERY & EQUIPMENT MFG				
33399601	Fluid power pumps, motors, and hydrostatic transmissions (hydraulic and pneumatic)	X	9 322	X	4 761
33399501	Fluid power cylinders and rotary actuators (hydraulic and pneumatic)	X	7 715	X	2 099
33399901	Fluid power filters (hydraulic and pneumatic)	X	1 735	X	258
33291203	Fluid power hose or tube fittings and assemblies (hydraulic and pneumatic)	X	3 733	X	1 699
33291207	Fluid power valves (hydraulic and pneumatic)	X	3 471	X	679
33272203	Metal bolts, nuts, screws, washers, rivets, and other screw machine products	X	4 345	X	2 138
33200063	Other fabricated metal products (except fluid power products and forgings)	X	20 411	X	9 636
33210001	Forgings	X	43 198	N	N
33151001	Iron and steel castings (rough and semifinished)	X	12 706	X	9 992
33152011	Nonferrous (aluminum, copper, etc.) castings (rough and semifinished)	X	1 349	N	N
33120007	Steel bars, bar shapes, and plates (except castings, forgings, and fabricated metal products)	X	23 947	X	16 912
33120017	Steel sheet and strip, including tin plate	X	1 716	X	1 482
33120069	Steel structural shapes (except castings, forgings, and fabricated metal products)	X	3 370	X	2 532
33120091	All other steel shapes and forms (except castings, forgings, and fabricated metal products)	X	2 090	X	5 107
331000AJ	Nonferrous shapes and forms (except castings, forgings, and fabricated metal products)	X	104	N	N
33531209	Fractional horsepower electric timing motors, synchronous and subsynchronous (less than 1 hp)	X	143	X	1 370
33531217	Other fractional horsepower electric motors (under 1 hp)	X	D	X	D
33531221	Integral horsepower electric motors and generators (1 hp or more)	X	12 328	X	1 506
001900B1	Electrical transmission, distribution, and control equipment	X	11 868	X	3 664
33500007	Electrical industrial capacitors, resistors, rheostats, and coil windings	X	3 399	X	D
33531409	Numerical controls for metalworking machinery (except programmable)	X	D	X	D
33531411	Programmable controllers for metalworking machinery	X	5 129	X	2 614
33299105	Ball bearings (mounted or unmounted)	X	9 582	X	D
33299103	Roller bearings (mounted or unmounted)	X	5 694	X	2 483
33361200	Mechanical speed changers, gears, and industrial high-speed drives	X	16 252	X	D
32192001	Wood boxes, pallets, skids, and containers	X	1 076	X	308
33351503	Cutting tools for machine tools	X	2 273	X	2 707
00970099	All other materials and components, parts, containers, and supplies	X	65 487	X	43 300
00971000	Materials, ingredients, containers, and supplies, n.s.k.	X	23 481	X	25 897

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

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.

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

333516 ROLLING MILL MACHINERY AND EQUIPMENT MANUFACTURING

This U.S. industry comprises establishments primarily engaged in manufacturing rolling mill machinery and equipment for metal production.

The data published with NAICS code 333516 include the following SIC industry:

3547 Rolling mill machinery

Appendix C.

Coverage and Methodology

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.

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

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

Not applicable for this report.

Appendix E. Metropolitan Areas

Not applicable for this report.

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

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
3331111 35231 35231	3331111000 3523100 3523100		3331209 35319 3531M pt			333132W 35330 35330		
3331113 35232 pt 35232 pt	3331113000 3523200 pt 3523200 pt		3331209111 3531910 3531M03			333132WYWWW 3533000 3533000		
3331117 35233 35233	3331117000 3523300 3523300		3331209245 3531945 3531M01			333132WYWY 3533002 3533002		
3331119 35235 35235	3331119000 3523500 3523500		3331209352 3531920 3531M05			3332103 35533 35533		
333111A 35236 35236	333111A000 3523600 3523600		3331209353 3531930 3531M07 pt			3332103101 3553311 3553311		
333111C 35239 35239	333111C110 3523926 3523926		3331209366 pt 3531960 pt 3531M07 pt			3332103106 3553313 3553313		
333111C220 pt 3523931 3523931	333111C220 pt 3523953 3523953		3331209377 3531970 3531M08 pt			3332103111 3553314 3553315 pt		
333111CYWV 3523900 3523900			3331209388 3531980 3531M21 pt			3332103116 3553316 3553315 pt		
333111E 3523C 3523C	333111E000 3523C00 3523C00		3331209YVW 3531900 3531M00 pt			3332103121 3553317 3553315 pt		
333111G 3523E pt 3523E pt	333111G000 pt 3523E00 pt 3523E00 pt		333120W 35310 pt 35310 pt			3332103126 3553318 3553315 pt		
333111J 3523F 3523F	333111J000 3523F00 3523F00		333120WYWWW 3531000 pt 3531000 pt			3332103231 3553319 3553319		
333111W 35230 pt 35230 pt	333111WYWW 3523002 pt 3523002 pt		333120WYWY 3531002 pt 3531002 pt			3332103236 3553321 3553321		
3331121 35241 pt 35241 pt	3331121000 pt 3524100 pt 3524100 pt		3331311 35325 35325			3332103241 3553323 3553323		
3331123 35244 35244	3331123000 3524400 3524400		3331313 35326 35326			3332103246 3553325 3553325		
3331127 35246 35246	3331127000 3524600 3524600		3331313100 3532600 3532600			3332103251 3553327 3553327		
333112W 35240 pt 35240 pt	333112WYWW 3524002 pt 3524002 pt		3331315 35327 35327			3332103256 3553329 3553329		
3331201 pt 35315 pt 3531A			3331315000 3532700 3532700			3332103261 3553333 3553333		
3331201 pt 35315 pt 3531B			3331317 35328 35328			3332103266 3553334 3553334		
3331201 pt 35314 3531C			3331317000 3532800 3532800			3332103271 3553335 3553335		
3331201 pt 35312 3531F			3331319 35329 35329			3332103276 3553337 3553337		
3331201 pt 35316 pt 3531G pt			3331319101 3532923 3532923 pt			3332103279 3553339 3553339 pt		
3331201 pt 35313 3531G pt			3331319106 3532925 3532925			3332103283 3553341 3553338 pt		
3331201 pt 35317 3531N pt			3331319111 3532927 3532927			3332103287 3553343 3553338 pt		
3331201 pt 35316 pt 3531P pt			3331319126 3532929 3532929 pt			3332103291 3553344 3553338 pt		
3331201110 3531100 3531E00			3331319216 3532961 3532961 pt			3332103296 3553387 3553387		
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			3331329106 3533B32 3533B32			3332911236 3554327 3554311 pt		
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333291WYVW	3554000	3554000	3332939471	3555887	3555887	3332981206	3559103	3559103
333291YVW	3554002	3554002	3332939581	3555891	3555891	3332981211	3559105	3559105
3332921 pt.	35521	35521	3332939686	3555893	3555893	3332981216	3559107	3559107
3332921 pt.	36992 pt	36992 pt	3332939791	3555899	3555899	3332981226	3559111	3559111
3332921101	3552115	3552115	3332939YVW pt	3555800	3555800	3332981331	3559113	3559113
3332921103	3552125	3552125	3332939YVW pt	3699200 pt	3699200 pt	3332981336	3559115	3559115
3332921106 pt	3552159 pt	3552136	333293W pt.	35550	35550	3332981YVW	3559100	3559100
3332921106 pt	3552159 pt	3552138	333293W pt.	36990 pt	36990 pt	3332983	35592	35592
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3332921111	3552151	3552151	333293WYVW pt.	3555002	3555002	3332983111	3559211	3559211
3332921116	3552153	3552153	333293WYVW pt.	3699002 pt	3699002 pt	3332983116	3559207	3559207
3332921121	3552155	3552157 pt	3332941	35561	35561	3332983121	3559213	3559215 pt
33329212131	3552167	3552167	3332941101	3556104	3556118 pt	3332983226	3559216	3559219 pt
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3332921246	3552175	3552181 pt	33329411131	3556115	3556118 pt	3332985	35595	35595
3332921351	3552177	3552182 pt	33329411141 pt	3556117 pt	3556105	3332985106	3559503	3559503
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3332921461	3699241	3699200 pt	33329411141 pt	3556117 pt	3556109	3332985211	3559505	3559505
3332921462	3552183	3552183	33329411141 pt	3556117 pt	3556118 pt	3332985316	3559509	3559509
3332921476	3552187	3552187	3332941171	3556121	3556121	3332985YVW	3559500	3559500
3332921566	3552184	3552186 pt	3332941YVW	3556100	3556100	3332987 pt.	35598	35598
3332921571	3552185	3552186 pt	3332943	35562	35562	3332987 pt.	36395 pt.	36395 pt.
3332921681	3552190	3552198 pt	3332943111	3556211	3556211	3332987101	3559802	3559801 pt
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3332921691	3552199	3552198 pt	3332943331	3556231	3556231	3332987111	3559806	3559801 pt
3332921YVW pt.	3552100	3552100	3332943441	3556241	3556241	3332987121	3559805	3559805
3332921YVW pt.	3699200 pt.	3699200 pt.	3332943551	3556251	3556251	3332987131	3559809	3559809
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3332923216	3552222	3552222	3332943YVW	3556200	3556200	3332987161	3559822	3559822
3332923321	3552223	3552231 pt	3332945	35563	35563	3332987171	3559827	3559827
3332923331	3552225	3552231 pt	3332945101	3556304	3556304	3332987181	3559831	3559831
3332923336	3552227	3552231 pt	3332945111	3556327	3556312	3332987186	3559835	3559835
3332923341	3552228	3552231 pt	3332945116	3556309	3556319 pt	3332987196	3559839	3559839
3332923346	3552229	3552231 pt	3332945121	3556313	3556319 pt	33329871B6	3559853	3559853
3332923451	3552235	3552243 pt	3332945131	3556315	3556319 pt	33329871C6	3559858	3559858
3332923456	3552239	3552243 pt	3332945135	3556329	3556319 pt	33329871G6	3559875	3559878 pt
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3332923YVW	3552200	3552200	3332945371	3556340	3556321 pt	33329871K6 pt	3559886 pt.	3559888
333292W pt.	35520	35520	3332945376	3556341	3556321 pt	33329871M1 pt.	3559887 pt.	3559884 pt
333292W pt.	36990 pt.	36990 pt.	3332945381	3556343	3556321 pt	33329871M1 pt.	3559887 pt.	3559889 pt
333292WYVW pt.	3552000	3699000 pt.	3332945386	3556345	3556321 pt	33329871M6 pt.	3559892 pt.	3559884 pt
333292WYVW pt.	3552002	3699000 pt.	3332945391	3556347	3556321 pt	33329871M6 pt.	3559892 pt.	3559889 pt
333292WYVW pt.	3699002 pt.	3699002 pt.	3332945YVW	3556300	3556300	33329871N1 pt.	3559893 pt.	3559884 pt
3332931	35551	35551	333294YVW	35560	35560	33329871N1 pt.	3559893 pt.	3559890
3332931101	3555101	3555101	333294YVW	3556000	3556000	33329871N6	3559891	3559891
3332931111	3555103	3555103	333294YVW	3556002	3556002	33329871P1	3559896	3559896
3332931221	3555132	3555132	3332950	35590 pt.	35590 pt.	33329871R1	3639515	3639510 pt
3332931331	3555133	3555133	3332950 pt.	35596	35596	33329871R6	3639523	3639520 pt
3332931351	3555136	3555136	3332950101	3559615	3559615	3332987216	3559803	3559803
3332931441	3555135	3555135	3332950121	3559617	3559617	3332987226	3559807	3559807
3332931YVW	3555100	3555100	3332950326	3559623	3559623	3332987236	3559811	3559811
3332933 pt.	35552	35552	3332950401 pt.	3559602 pt.	3559603	3332987266	3559825	3559825
3332933 pt.	36992 pt.	36992 pt.	3332950401 pt.	3559602 pt.	3559603	3332987276	3559829	3559829
3332933101	3555203	3555203	3332950401 pt.	3559602 pt.	3559603	3332987291	3559836	3559836
3332933111	3555205	3555205	3332950401 pt.	3559602 pt.	3559613	33329872A1	3559841	3559841
3332933221	3555211	3555209 pt	3332950401 pt.	3559602 pt.	3559603	33329872B1	3559845	3559845
3332933231	3555213	3555209 pt	3332950401 pt.	3559602 pt.	3559603	33329872C1	3559855	3559855
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3332933261	3555219	3555209 pt	3332950416	3559619	3559619	33329872J6	3559883	3559878 pt
3332933YVW pt.	3555200	3555200	3332950421	3559621	3559621	33329872P6	3559897	3559897
3332933YVW pt.	3699200 pt.	3699200 pt.	3332950431	3559625	3559625	33329873D1	3559861	3559861
3332935	35553	35553	3332950436	3559627	3559627	33329873E1	3559865	3559865
3332935101	3555305	3555300 pt	3332950441 pt	3559630 pt	3559631	33329873E6	3559867	3559867
3332935151	3555309	3555300 pt	3332950446	3559633	3559633 pt	33329873F1	3559869	3559869
3332935YVW	3555300	3555300 pt	3332950451	3559635	3559633 pt	33329873G1	3559874	3559874
3332937	35556	35556	3332950456	3559637	3559633 pt	33329874A6	3559843	3559843
3332937101	3555661	3555661	3332950461	3559639	3559639	33329875R1 pt.	3559899 pt.	3559848
3332937111	3555666	3555666	3332950471	3559641	3559641	33329875R1 pt.	3559899 pt.	3559851
3332937121	3555667	3555667	3332950476	3559646 pt	3559645	33329875R1 pt.	3559899 pt.	3559898
3332937131	3555671	3555671	3332950581 pt	3559646 pt	3559647	3332987YVW pt.	3559800	3559800
3332937141	3555673	3555673	3332950586 pt	3559648 pt	3559643	3332987YVW pt.	3639500 pt.	3639500 pt
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3333112155	3581255	3581251 pt	3333191111	3589111	3589111	3334120463	3564413	3564413
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3333112YVV	3581200	3581200	3333191131	3589131	3589131	3334120575	3564435	3564435
333311W	35810	35810	3333191241	3589161	3589161	3334120688 pt	3564438 pt	3564437
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333311WYVY	3581002	3581002	3333191261	3589167	3589167	3334120YVW pt	3564000 pt	3564000 pt
3333120	35820	35820	3333191271	3589170	3589170	3334120YVW pt	3564000	3564000
3333120101 pt	3582013 pt	3582011	3333191281	3589181	3589181	3334120YVW pt	3564400	3564400
3333120101 pt	3582013 pt	3582012	3333191391	3589185	3589185	3334120YWY	3564002 pt	3564002 pt
3333120211	3582017	3582017	3333191YVW	3589100	3589100	3334141	34333	34333
3333120231	3582021	3582018 pt	3333193	35893	35893	3334141101	3433321	3433321
3333120241	3582025	3582018 pt	3333193101	3589301	3589301	3334141106	3433335	3433335
3333120351	3582027	3582027	3333193111	3589302	3589302	3334141111	3433365	3433365
3333120361	3582028	3582029 pt	3333193221	3589307	3589307	3334141116	3433377	3433377
3333120366	3582030	3582029 pt	3333193YVW	3589300	3589300	3334141YVW	3433300	3433300
3333120471	3582031	3582031	3333195	35597	35597	3334143	34334	34334
3333120491	3582091	3582091	3333195101	3559701	3559701	3334143101	3433411	3433410 pt
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3333120581	3582045	3582039 pt	3333195111	3559703	3559703	3334143111	3433415	3433410 pt
3333120586	3582049	3582039 pt	3333195116	3559704	3559704	3334143116	3433417	3433410 pt
3333120YVW	3582000	3582000	3333195121	3559705	3559705	3334143121	3433419	3433410 pt
3333120YVY	3582002	3582002	3333195126	3559709	3559709	3334143126	3433421	3433410 pt
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3333134000	3578410	3578400 pt	3333197000	3699100	3699100	3334143146	3433462	3433462
3333137	35793	35793	3333199 pt.	35892	35892	3334143151	3433474	3433474
3333137000	3579300	3579300	3333199 pt.	35892	35892	3334143YVW	3433400	3433400
333313A	35795	35795	3333199 pt.	35994 pt	35994 pt	3334145	34335	34335
333313A000	3579500	3579500	3333199101	3589201	3589201	3334145101	3433512	3433512
333313D	35799 pt	35799 pt	3333199106	3589202	3589202	3334145111	3433520	3433520
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333313G	35789 pt	35789 pt	3333199116	3589226	3589226	3334147	34338	34338
333313G000 pt	3578910	3578900 pt	3333199146	3589273	3589273	3334147101	3433820	3433820
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333313J	3579A pt	3579A pt	3333199161	3589285	3589281 pt	3334147111	3433832	3433832
333313J000	3579A10	3579A00 pt	3333199166	3589287	3589281 pt	3334147116	3433838	3433838
333313W pt.	35780 pt	35780 pt	3333199171	3589288	3589281 pt	3334147121	3433854	3433854
333313W pt.	35790 pt	35790 pt	3333199178	3589282	3589282	3334147126	3433888	3433888
333313WYVW pt.	3578000 pt	3578000 pt	3333199182	3589283	3589283	3334147YVW	3433800	3433800
333313WYVY pt.	3579000 pt	3579000 pt	3333199186	3589284	3589284	3334149 pt.	34339	34339
333313WYVY pt.	3578002 pt	3578002 pt	3333199189	3589286	3589286	3334149 pt.	36345 pt	36345 pt
333313WYVY pt.	3579002 pt	3579002 pt	3333199194	3589291	3589296 pt	3334149 pt.	36349 pt	36349 pt
3333141 pt.	36992 pt	36992 pt	3333199196	3589295	3589296 pt	3334149101 pt	3634901 pt	3634906
3333141000 pt	38271	38271	3333199221	3589227	3589227	3334149101 pt	3433901 pt	3433908
3333141000 pt	3827100	3827100 pt	3333199236	3589245	3589245	3334149101 pt	3433901 pt	3433911
3333143	38274	38274	3333199256	3589276	3589276	3334149101 pt	3433901 pt	3433913
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3333143230	3827420	3827420	3333199301	3599431	3599431	3334149111	3433916	3433916
3333143YVW	3827400	3827400	3333199326	3589242	3589242	3334149116	3433918	3433918
333314W pt.	36990 pt	36990 pt	3333199331	3589243	3589243	3334149121	3433919	3433919
333314WYVW pt.	38270	38270	3333199341	3589246	3589246	3334149126	3433960	3433960
333314WYVY pt.	3699002 pt	3699002 pt	3333199YVW pt	3589200	3589200	3334149131	3433971	3433971
333314WYVY pt.	3827002	3827002	3333199YVW pt.	3599040 pt.	3599040 pt.	3334149136	3433975	3433975
3333151 pt.	36992 pt	36992 pt	333319W pt.	35890	35890	3334149140	3634520	3634500 pt
3333151101 pt	38611	38611	333319W pt.	35990 pt	35990 pt	3334149150	3634930	3634920 pt
3333151101 pt	3861131 pt	3861111	333319W pt.	36990 pt	36990 pt	3334149151 pt	3433989 pt	3433945
3333151101 pt	3861131 pt	3861121	333319WYVW pt.	3599000 pt.	3599000 pt.	3334149151 pt	3433989 pt	3433950
3333151101 pt	3861131 pt	3861132	333319WYVW pt.	3599000 pt.	3599000 pt.	3334149151 pt	3433989 pt	3433961
3333151206	3861167	3861167	333319WYVY pt.	3599002 pt.	3599002 pt.	3334149YVW pt.	3433900	3433900
3333151311	3861173	3861173	333319WYVY pt.	3599002 pt.	3599002 pt.	3334149YVW pt.	3634500	3634500 pt
3333151416	3861181	3861181	333319WYVY pt.	3599002 pt.	3599002 pt.	3334149YVW pt.	3634900 pt.	3634900 pt
3333151521 pt	3699251	3699200 pt	3334111	35646	35646	333414W pt.	34330	34330
3333151521 pt	3861197	3861197	3334111101	3564611	3564611	333414WYVW pt.	3634000	3634000
3333151YVW pt.	3699200 pt.	3699200 pt	3334111116	3564621	3564621	333414WYVY pt.	3433002	3433002
3333151YVW pt.	3861100	3861100	3334111YVW	3564600	3564600	333414WYVY pt.	3634002 pt.	3634002 pt
3333153	38612	38612	3334113	35645	35645	3334151 pt.	34432 pt	34432 pt
3333153100	3861200	3861200	3334113103	3564543	3564543	3334151000 pt	35851	35851 pt
3333155	38614	38614	3334113207	3564531	3564531	3334151000 pt	3443297	3443298 pt
3333155101	3861406	3861406	3334113211	3564541	3564541	3334151000 pt	3585100	3585100 pt
3333155103	3861403	3861403	3334113231	3564546	3564546	3334153	35853	35853
3333155111	3861404	3861404	3334113355	3564547	3564547	3334153101	3585312	3585312
3333155116	3861405	3861405	3334113YVW	3564500	3564500	3334153106	3585315	3585315
3333155221	3861421	3861421	333411W	35640 pt	35640 pt	3334153111	3585318	3585318
3333155YVW	3861400	3861400	333411WYVW	3564000 pt.	3564000 pt.	3334153116	3585322	3585322
3333157	38613	38613	333411WYVY	3564002 pt.	3564002 pt.	3334153121	3585323	3585323
3333157101 pt	3861332 pt.	3861311	3334120 pt.	35640 pt.	35640 pt.	3334153126	3585328	3585328
3333157101 pt	3861332 pt.	3861321	3334120 pt.	35643	35643	3334153131	3585332	3585332
3333157206	3861352	3861352	33341201 pt.	35644	35644	3334153136	3585335	3585335
3333157311	3861397	3861397	3334120101	3564441	3564441	3334153141	3585337	3585337
3333157YVW	3861300	3861300	3334120104	3564443	3564443	3334153146	3585343	3585343
333315W pt.	36990 pt	36990 pt	3334120107	3564445	3564445	3334153151	3585352	3585352
333315W pt.	3699000 pt.	3699000 pt.	3334120217	3564317	3564317	3334153156	3585357	3585357
333315WYVW pt.	3699000 pt.	3699000 pt.	3334120219	3564319	3564319	3334153191	3585398	3585398
333315WYVY pt.	3699002 pt.	3699002 pt.	3334120221	3564321	3564321	3334153YVW	3585300	3585300
333315WYVY pt.	3861002 pt.	3861002 pt.	3334120224	3564324	3564324	3334155	35855	35855
333315YVW pt.	3861002 pt.	3861002 pt.	3334120324	3564324	3564324	3334155000	3585500	3585500
333315YVWY pt.	3861002 pt.	3861002 pt.	3334120327	3564327	3564327	3334156	35856	35856
333315YVWY pt.	3861002 pt.	3861002 pt.	3334120329	3564329	3564329	3334156000	3585600	3585600
333315YVWY pt.	3861002 pt.	3861002 pt.	3334120344 pt	3564344 pt.	3564344 pt.			

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3334159	35859	35859	333512W pt	36990 pt	36990 pt	3335153146	3545446	3545445 pt
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3334159111	3585902	3585902	333512WYWW pt	3699000 pt	3699000 pt	3335153154	3545457	3545459 pt
3334159121	3585903	3585903	333512WYWW pt	3541002	3541002	3335153156	3545451	3545451
3334159131	3585911	3585906 pt	333512WYWW pt	3699002 pt	3699002 pt	3335153166	3545458	3545459 pt
3334159141	3585915	3585906 pt				3335153176	3545498	3545498
3334159YVW	3585900	3585900	3335131	35421	35421	3335153YVW	3545400	3545400
			3335131000	3542100	3542100			
333415A	3585A	35854 pt	3335133	35422	35422	333515W	354500 pt	354500 pt
333415A000	3585A00	3585400 pt	3335133000	3542200	3542200	333515WYWW	3545000 pt	3545000 pt
						333515WYVW	3545002 pt	3545002 pt
333415C	3585C	3585C	3335135	35423	35423			
333415C000	3585C00	3585C00	3335135000	3542300	3542300	3335161	35471	35471
						3335161101 pt	3547115 pt	3547111
333415D	3585D	3585D	3335137	35424	35424	3335161101 pt	3547115 pt	3547111
333415D101	3585D10	3585D10	3335137101	3542409	3542411 pt	3335161101 pt	3547115 pt	3547117
333415D111	3585D20	3585D20	3335137111	3542410	3542411 pt	3335161191	3547118	3547118
333415D121	3585D30	3585D30	3335137116	3542475	3542475	3335161YVW	3547100	3547100
333415D131	3585D40	3585D40	3335137YVW	3542400	3542400			
333415D141	3585D50	3585D50						
333415D151	3585D60	3585D60	333513W	35420	35420	3335163	35472	35472
333415D161	3585D73	3585D70 pt	333513WYWW	3542000	3542000	3335163101	3547221	3547221
333415D171	3585D75	3585D70 pt	333513WYVW	3542002	3542002	3335163106	3547223	3547223
333415D181	3585D80	3585D80	3335140 pt	35440 pt	35440 pt	3335163191 pt	3547226 pt	3547227
333415DYVW	3585D00	3585D00				3335163191 pt	3547226 pt	3547228
						3335163YVW	3547200	3547200
333415E	3585E	35852 pt	3335140 pt	35441	35441			
333415E000	3585E00	3585200 pt	3335140101	3544113	3544113	3335165	35473	35473
			3335140103	3544115	3544115	3335165101	3547335	3547335
			3335140106	3544114	3544117 pt	3335165106 pt	3547345 pt	3547341
333415F	3585F	35852 pt	3335140109	3544116	3544117 pt	3335165106 pt	3547345 pt	3547343
333415F000	3585F00	3585200 pt	3335140112	3544118	3544118	3335165106 pt	3547345 pt	3547347
			3335140215	3544119	3544119	3335165111	3547349	3547349
333415G	3585G	35852 pt	3335140318	3544122	3544122	3335165116	3547351	3547351
333415G000	3585G00	3585200 pt	3335140321	3544122	3544122	3335165121	3547352	3547352
			3335140326	3544124	3544124	3335165YVW	3547300	3547300
333415W pt	34430 pt	34430 pt	3335140332	3544126	3544126			
333415W pt	35850 pt	35850 pt	3335140423	3544123	3544123	333516W	35470	35470
333415WYWW pt	3443000 pt	3443000 pt	3335140429	3544125	3544125	333516WYWW	3547000	3547000
333415WYVW pt	3585000 pt	3585000 pt	3335140535	3544127	3544127	333516WYVW	3547002	3547002
333415WYVW pt	3443002 pt	3443002 pt	3335140538	3544128	3544128			
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			3335140543	3544135	3544135	3335181	35492	35492
3335110 pt	35440 pt	35440 pt	3335140546	3544132	3544132	3335181101	3549211	3549211
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3335110101	3544203	3544203	3335140655	3544145	3544145	3335181416	3549213	3549213
3335110106	3544205	3544205				3335181521	3549218	3549218
3335110211	3544207	3544207	3335140658	3544146	3544146	3335181YVW	3549200	3549200
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3335110241	3544242	3544242	3335140775	3544178	3544178	3335183116	3549543	3549543
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3335110261	3544255	3544255	3335140YVW pt	3544100	3544100	3335183YVW	3549500	3549500
3335110266	3544259	3544259	3335140YVW pt	3544002 pt	3544002 pt			
3335110276	3544264	3544263 pt						
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3335110286	3544267	3544267 pt	3335151102	3545114	3545114	333518WYVW	3549000	3549000
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			3335151148	3545167	3545167	3336110211	3511011	3511011
3335121 pt	35413	35413	3335151152	3545172	3545172	3336110706	3511009	3511009
			3335151188	3545198	3545198	3336110741	3511071	3511071
3335121 pt	36992 pt	36992 pt	3335151204	3545115	3545115	3336110746	3511072	3511072
3335121100 pt	3541300	3541300	3335151206	3545121	3545121	3336110761	3511081	3511081
3335121100 pt	3699233	3699200 pt				3336110766	3511083	3511083
3335121YVW	3699200 pt	3699200 pt	3335151308	3545122	3545122	3336110776	3511095	3511095
			3335151312	3545124	3545124	3336110836	3511061	3511061
3335122	35414	35414	3335151314	3545125	3545125	3336110856	3511079	3511079
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			3335151318	3545127	3545127	3336110951	3511075	3511075
3335123	35415	35415	3335151322	3545129	3545129	3336110YVW	3511000	3511000
3335123000	3541500	3541500	3335151434	3545151	3545151	3336110YVW	3511002	3511002
			3335151436	3545152	3545152			
3335124	35416	35416	3335151438	3545153	3545153	3336123	35663	35663 pt
3335124000	3541600	3541600	3335151442	3545154	3545154	3336123111 pt	3566311 pt	3566041 pt
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3335125	35418	35418	3335151444	3545162	3545162	3336123113 pt	3566313 pt	3566041 pt
3335125101	3541811	3541811	3335151446	3545164	3545164	3336123116 pt	3566316 pt	3566042 pt
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3335125111	3541851	3541851	3335151558	3545175	3545175	3336123118 pt	3566318 pt	3566043
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3335125199	3541891	3541891	3335151564	3545181	3545181	3336123125 pt	3566325 pt	3566044 pt
3335125YVW	3541800	3541800	3335151568	3545186	3545186	3336123125 pt	3566325 pt	3566041 pt
			3335151572	3545187	3545187			
3335126	35419	35419	3335151574	3545189	3545189			
3335126101	3541911	3541911	3335151576	3545192	3545192			
3335126106	3541941	3541941				3336123135 pt	3566335 pt	3566041 pt
3335126YVW	3541900	3541900	3335151578	3545194	3545194	3336123135 pt	3566335 pt	3566046 pt
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3335127	3541A	3541A	3335151584	3545196	3545196	3336123163	3566353	3566041 pt
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			3335151592	3545199	3545199	3336123157	3566357	3566041 pt
3335128	3541B	3541B	3335151656	3545174	3545174	3336123YVW	3566300	3566000 pt
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			3335151YVW	3545100	3545100			
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333512A pt	3541D	3541D	3335153106	3545414	3545414	3336127116 pt	3566716	3566024 pt
			3335153111	3545417	3545417	3336127118 pt	3566718	3566017 pt
333512A pt	36992 pt	36992 pt	3335153116	3545431	3545431	3336127121 pt	3566721	3566018 pt
333512A100 pt	3541D00	3541D00	3335153121	3545437	3545437	3336127121 pt	3566721	3566017 pt
333512A100 pt	3699231	3699200 pt	3335153126	3545438	3545438	3336127121 pt	3566721	3566024 pt
333512AYVW	3699200 pt	3699200 pt	3335153131	3545441	3545441	3336127225	3566725	3566034
			3335153136	3545443	3545443	3336127226	3566726	3566037
333512W pt	35410	35410		</				

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3339243YVV	3537400	3537400	3339927116	3548308	3548308	3339940YVW	3567002	3567002
333924W	353700 pt	35370 pt	3339927121	3548309	3548309	3339951	35934	35934
333924WYWW	3537000 pt	3537000 pt	3339927126	3548311	3548311	3339951100	3593400	3593400
333924WYVY	3537002 pt	3537002 pt	3339927131	3548319	3548319	3339953	35935	35935
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3339911106	3546238	3546238	3339929106	3548401	3548401	3339955100	3593900	3593900
3339911111	3546241	3546241	3339929111	3548402	3548402	3339957 pt	35932	35932
3339911116	3546242	3546242	3339929116	3548403	3548403	3339957 pt	37284 pt	37284 pt
3339911121	3546244	3546244	3339929121	3548404	3548404	3339957100 pt	3593200	3593200
3339911126	3546245	3546245	3339929126	3548405	3548405	3339957100 pt	3728400 pt	3728400 pt
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3339911136	3546249	3546249	3339929YVW	3548409	3548409	3339957100 pt	3728409 pt	3728473 pt
3339911141	3546251	3546251	3339929YVW	3548400	3548400	3339957100 pt	3728409 pt	3728483 pt
3339911146 pt	3546262 pt	3546261	333992A pt	35485	35485	3339957100 pt	3728409 pt	3728485 pt
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3339911YVW	3546200	3546200	333992A116	3699291	3699291	333995WYVY pt	3593002	3593002
3339913	35463	35463	333992A121	3548515	3548515	333995WYVY pt	3728002 pt	3728002 pt
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3339917	35464	35464	333992AYVW pt	3548500	3548500	3339965100	3594500	3594500
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3339917106	3546405	3546405	333992W pt	35480 pt	35480 pt	3339967 pt	37284 pt	37284 pt
3339917111	3546406 pt	3546409	333992WYVW pt	36990 pt	36990 pt	3339967100 pt	3594600	3594600
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3339917116	3546418	3546419 pt	333992WYVY pt	3548002 pt	3548002 pt	3339967100 pt	3728405 pt	3728473 pt
3339917121	3546421	3546421	333992WYVY pt	3699002 pt	3699002 pt	3339967100 pt	3728405 pt	3728475 pt
3339917YVW	3546400	3546400	3339931	35651	35651	3339969 pt	35949	35949
3339919	35465	35465	3339931103	3565123	3565123	3339969 pt	37284 pt	37284 pt
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3339919104	3546511	3546511	33399311315	3565131	3565131	333996W pt	35940	35940
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3339919112	3546513	3546513	3339931321	3565105	3565105	333996WYVW pt	3594000	3594000
3339919116	3546514	3546514	3339931426	3565152	3565152	333996WYVW pt	3728000 pt	3728000 pt
3339919121	3546515	3546515	3339931433	3565122	3565122	333996WYVY pt	3594002	3594002
3339919124	3546516	3546516	3339931437	3565151	3565151	333996WYVY pt	3728002 pt	3728002 pt
3339919128	3546517	3546517	3339931544	3565133	3565133	3339971	35961	35961
3339919132	3546521	3546521	3339931545	3565135	3565135	3339971101	3596101	3596101
3339919136	3546522	3546522	3339931651	3565145	3565145	3339971103	3596103	3596103
3339919141	3546523	3546523	3339931755	3565137	3565137	3339971205	3596105	3596105
3339919144	3546524	3546524	3339931859	3565141	3565141	3339971207	3596107	3596107
3339919148	3546525	3546525	3339931963	3565143	3565143	3339971209 pt	3596110 pt	3596109
3339919152	3546527	3546527	3339931A67	3565118	3565118	3339971209 pt	3596110 pt	3596111
3339919156	3546528	3546528	3339931A71	3565149	3565149	3339971211	3596113	3596113
3339919161	3546529	3546529	3339931B79	3565128	3565128	3339971215	3596117	3596117
3339919164	3546531	3546531	3339931B83	3565153	3565153	3339971313	3596115	3596115
3339919168	3546533	3546533	3339931C99	3565159	3565159	3339971YVW	3596100	3596100
3339919172	3546536	3546536	3339931YVW	3565100	3565100	3339973	35962	35962
3339919176	3546537	3546537	3339935100	3565200	3565200	3339973101	3596201	3596201
3339919181	3546538	3546538	333993W	35650	35650	3339973101	3596201	3596203
3339919184	3546539	3546539	333993WYVW	3565000	3565000	3339973103 pt	3596209 pt	3596205
3339919188	3546541	3546541	333993WYVY	3565002	3565002	3339973103 pt	3596209 pt	3596207
3339919192	3546543	3546543	3339940 pt	35670 pt	35670	3339973107	3596214	3596212
3339919YVW	3546500	3546500	3339940 pt	35670 pt	35670	3339973109	3596221	3596221
333991W	35460	35460	3339940 pt	35670 pt	35670	3339973YVW	3596200	3596200
333991WYVW	3546000	3546000	3339940 pt	35670 pt	35670	3339975	35963	35963
333991WYVY	3546002	3546002	3339940 pt	35670 pt	35670	3339975101	3596301	3596301
3339921	35481 pt	35481 pt	3339940 pt	35670 pt	35670	3339975103	3596303	3596303
3339921101	3548103	3548103	3339940 pt	35670 pt	35670	3339975105	3596305	3596305
3339921106	3548101	3548104 pt	3339940 pt	35670 pt	35670	3339975107	3596309	3596309
3339921111	3548102	3548104 pt	3339940 pt	35670 pt	35670	3339975YVW	3596300	3596300
3339921126	3548107	3548107	3339940 pt	35670 pt	35670	333997W	35960	35960
3339921131	3548108	3548108	3339940 pt	35670 pt	35670	333997WYVW	3596000	3596000
3339921136	3548109	3548109	3339940 pt	35670 pt	35670	333997WYVY	3596002	3596002
3339921141	3548111	3548111	3339940 pt	35670 pt	35670	3339991	35693	35693
3339921146	3548112	3548112	3339940 pt	35670 pt	35670	3339991104	3569304	3569304
3339921151	3548114	3548114	3339940 pt	35670 pt	35670	3339991108 pt	3569308 pt	3569305
3339921156	3548115	3548115	3339940 pt	35670 pt	35670	3339991108 pt	3569308 pt	3569306
3339921161	3548118	3548119	3339940 pt	35670 pt	35670	3339991111	3569311	3569311
3339921YVW	3548100 pt	3548100 pt	3339940 pt	35670 pt	35670	3339991212	3569312	3569312
3339923	35482	35482	3339940 pt	35670 pt	35670	3339991389 pt	3569389 pt	3569300 pt
3339923101	3548203	3548203	3339940 pt	35670 pt	35670	3339991389 pt	3569389 pt	3569309
3339923106	3548204	3548204	3339940 pt	35670 pt	35670	3339991YVW	3569300	3569300 pt
3339923111	3548205	3548205	3339940 pt	35670 pt	35670	3339993	35694	35694
3339923116	3548206	3548206	3339940 pt	35670 pt	35670	3339993000	3569400	3569400
3339923121	3548209	3548209	3339940 pt	35670 pt	35670	3339994	35695	35695
3339923126	3548211	3548211	3339940 pt	35670 pt	35670	3339994000	3569500	3569500
3339923131	3548212	3548212	3339940 pt	35670 pt	35670	3339996	35696	35696
3339923136	3548213	3548213	3339940 pt	35670 pt	35670	3339996000	3569600	3569600
3339923141	3548214	3548214	3339940 pt	35670 pt	35670			
3339923146	3548217	3548217						
3339923151	3548218	3548218						
3339923YVW	3548200	3548200						

1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published	1997 published	1997 collected	1992 published
3339998	35699	35699	3339998870 pt	3569945 pt	3569942	3339999	35994 pt	35994 pt
3339998109	3569909	3569909	3339998870 pt	3569945 pt	3569943	3339999100 pt	3599400 pt	3599400 pt
3339998218	3569903	3569903	3339998870 pt	3569945 pt	3569944	3339999100 pt	3599498	3599498
3339998321	3569921	3569921	3339998880	3569907	3569913 pt			
3339998425	3569905	3569905	3339998883	3569908	3569913 pt	3339999W pt	35690	35690
3339998436	3569915	3569915	3339998886	3569917	3569917			
3339998446	3569946	3569947 pt	3339998899	3569927	3569927	3339999W pt	35990 pt	35990 pt
3339998451	3569950	3569951 pt	3339998991	3569931	3569931	3339999WYWWW pt...	3569000	3569000
3339998556	3569901	3569901	3339998995 pt	3569948 pt	3569925	3339999WYWWW pt...	3599000 pt	3599000 pt
3339998661	3569911	3569911	3339998995 pt	3569948 pt	3569947 pt	3339999WYWWW pt...	3599098	3599000 pt
3339998763	3569923	3569923	3339998996	3569952	3569951 pt	3339999WYWY pt ...	3569002	3569002
3339998870 pt	3569945 pt	3569941	3339998YVW	3569900	3569900	3339999WYWY pt ...	3599002 pt	3599002 pt

