

# Construction Machinery Manufacturing: 2002

Issued December 2004

EC02-311-333120 (RV)

## 2002 Economic Census

*Manufacturing*

Industry Series



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U.S. Department of Commerce  
Economics and Statistics Administration  
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## CONTENTS

Introduction to the Economic Census .....	v
Manufacturing .....	ix
Tables	
1. Historical Statistics for the Industry: 2002 and Earlier Years ...	1
2. Industry Statistics for Selected States: 2002 .....	2
3. Detailed Statistics by Industry: 2002 .....	3
4. Industry Statistics by Employment Size: 2002.....	4
5. Industry Statistics by Primary Product Class Specialization: 2002 .....	5
6a. Products Statistics: 2002 and 1997 .....	6
6b. Product Class Shipments for Selected States: 2002 and 1997 .	8
7. Materials Consumed by Kind: 2002 and 1997.....	10
Appendixes	
A. Explanation of Terms .....	A-1
B. NAICS Codes, Titles, and Descriptions .....	B-1
C. Methodology.....	C-1
D. Geographic Notes .....	--
E. Metropolitan and Micropolitan Statistical Areas .....	--
F. Comparability of Product Classes and Product Codes: 2002 to 1997.....	F-1

-- Not applicable for this report.

# Introduction to the Economic Census

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## **PURPOSES AND USES OF THE ECONOMIC CENSUS**

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

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

- Policymaking agencies of the federal government use the data to monitor economic activity and to 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.

## **INDUSTRY CLASSIFICATIONS**

Data from the 2002 Economic Census are published primarily according to the 2002 North American Industry Classification System (NAICS). NAICS was first adopted in the United States, Canada, and Mexico in 1997. The 2002 Economic Census covers 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 Food Services
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), largely covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 100 subsectors (three-digit codes), 317 industry groups (four-digit codes), and, as implemented in the United States, 1,179 industries (six-digit codes).

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## **RELATIONSHIP TO HISTORICAL INDUSTRY CLASSIFICATIONS**

Prior to the 1997 Economic Census, data were published according to the Standard Industrial Classification (SIC) system. 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 1997 Economic Census *Bridge Between NAICS and SIC* demonstrates the relationships between NAICS and SIC industries. Where changes are significant, it may not be possible to construct time series that include data for points both before and after 1997.

Most industry classifications remained unchanged between 1997 and 2002, but NAICS 2002 includes substantial revisions within the construction and wholesale trade sectors, and a number of revisions for the retail trade and information sectors. These changes are noted in industry definitions and will be demonstrated in the *Bridge Between NAICS 2002 and NAICS 1997*.

For 2002, data for enterprise support establishments (those functioning primarily to support the activities of their company's operating establishments, such as a warehouse or a research and development laboratory) are included in the industry that reflects their activities (such as warehousing). For 1997, such establishments were termed auxiliaries and were excluded from industry totals.

## **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. (For selected industries, only payroll, employment, and classification are collected for individual establishments, while other data are collected on a consolidated basis.)

## **GEOGRAPHIC AREA CODING**

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for states, metropolitan and micropolitan statistical areas, counties, and corporate municipalities (places) including cities, towns, townships, 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 administrative sources is used as a basis for coding.

## **AVAILABILITY OF ADDITIONAL DATA**

All results of the 2002 Economic Census are available on the Census Bureau Internet site ([www.census.gov](http://www.census.gov)) and on digital versatile discs (DVD-ROMs) for sale by the Census Bureau. The American FactFinder system at the Internet site allows selective retrieval and downloading of the data. For more information, including a description of reports being issued, see the Internet site, write to the U.S. Census Bureau, Washington, DC 20233-6100, or call Customer Services at 301-763-4100.

## **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

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from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some service trades in 1933. Censuses of construction, manufacturing, and the other business 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 and 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 report forms.

The range of industries covered in the economic census expanded between 1967 and 2002. 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. New for 2002 is coverage of four industries classified in the agriculture, forestry, and fishing sector under the SIC system: landscape architectural services, landscaping services, veterinary services, and pet care services.

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. Reports for 1997 were published primarily on the Internet and copies of 1992 reports are also available there. CD-ROMs issued from the 1987, 1992, and 1997 Economic Censuses contain databases that include all or 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 the 2002 Economic Census and related surveys is published in the *Guide to the 2002 Economic Census* at [www.census.gov/econ/census02/guide](http://www.census.gov/econ/census02/guide). More information on the methodology, procedures, and history of the census will be published in the *History of the 2002 Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).



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# Manufacturing

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## SCOPE

The Manufacturing sector (sector 31-33) comprises establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products. The assembling of component parts of manufactured products is considered manufacturing, except in cases where the activity is appropriately classified in Sector 23, Construction.

Establishments in the manufacturing sector are often described as plants, factories, or mills and characteristically use power-driven machines and materials-handling equipment. However, establishments that transform materials or substances into new products by hand or in the worker's home and those engaged in selling to the general public products made on the same premises from which they are sold, such as bakeries, candy stores, and custom tailors, may also be included in this sector. Manufacturing establishments may process materials or may contract with other establishments to process their materials for them. Both types of establishments are included in manufacturing.

The materials, substances, or components transformed by manufacturing establishments are raw materials that are products of agriculture, forestry, fishing, mining, or quarrying, as well as products of other manufacturing establishments. The materials used may be purchased directly from producers, obtained through customary trade channels, or secured without recourse to the market by transferring the product from one establishment to another, under the same ownership. The new product of a manufacturing establishment may be finished in the sense that it is ready for utilization or consumption, or it may be semifinished to become an input for an establishment engaged in further manufacturing. For example, the product of the alumina refinery is the input used in the primary production of aluminum; primary aluminum is the input to an aluminum wire drawing plant; and aluminum wire is the input for a fabricated wire product manufacturing establishment.

The subsectors in the manufacturing sector generally reflect distinct production processes related to material inputs, production equipment, and employee skills. In the machinery area, where assembling is a key activity, parts and accessories for manufactured products are classified in the industry of the finished manufactured item when they are made for separate sale. For example, a replacement refrigerator door would be classified with refrigerators and an attachment for a piece of metal working machinery would be classified with metal working machinery. However, components, input from other manufacturing establishments, are classified based on the production function of the component manufacturer. For example, electronic components are classified in Subsector 334, Computer and Electronic Product Manufacturing; and stampings are classified in Subsector 332, Fabricated Metal Product Manufacturing.

Manufacturing establishments often perform one or more activities that are classified outside the manufacturing sector of NAICS. For instance, almost all manufacturing has some captive research and development or administrative operations, such as accounting, payroll, or management. These captive services are treated the same as captive manufacturing activities. When the services are provided by separate establishments, they are classified to the NAICS sector where such services are primary, not in manufacturing.

The boundaries of manufacturing and the other sectors of the classification system can be somewhat blurry. The establishments in the manufacturing sector are engaged in the transformation of materials into new products. Their output is a new product. However, the definition of what constitutes a new product can be somewhat subjective. As clarification, the following activities are

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considered manufacturing in NAICS: milk bottling and pasteurizing; water bottling and processing; fresh fish packaging (oyster shucking, fish filleting); apparel jobbing (assigning of materials to contract factories or shops for fabrication or other contract operations); as well as contracting on materials owned by others; printing and related activities; ready-mixed concrete production; leather converting; grinding of lenses to prescription; wood preserving; electroplating, plating, metal heat treating, and polishing for the trade; lapidary work for the trade; fabricating signs and advertising displays; rebuilding or remanufacturing machinery (i.e., automotive parts); ship repair and renovation; machine shops; and tire retreading.

**Exclusions.** There are activities that are sometimes considered manufacturing, but for NAICS are classified in another sector. These activities include logging, classified in Sector 11, Agriculture, Forestry, Fishing and Hunting is considered a harvesting operation; the beneficiating of ores and other minerals, classified in Sector 21, Mining, is considered part of the activity of mining; the construction of structures and fabricating operations performed at the site of construction by contractors, is classified in Sector 23, Construction; establishments engaged in breaking of bulk and redistribution in smaller lots, including packaging, repackaging, or bottling products, such as liquors or chemicals; the customized assembly of computers; sorting of scrap; mixing paints to customer order; and cutting metals to customer order, classified in Sector 42, Wholesale Trade or Sector 44-45, Retail Trade, produce a modified version of the same product, not a new product; and publishing and the combined activity of publishing and printing, classified in Sector 51, Information, perform the transformation of information into a product where as the value of the product to the consumer lies in the information content, not in the format in which it is distributed (i.e., the book or software diskette).

The tabulations for this sector do not include central administrative offices, warehouses, or other establishments that serve manufacturing establishments within the same organization. Data for such establishments are classified according to the nature of the service they provide. For example, separate headquarters establishments are reported in NAICS Sector 55, Management of Companies and Enterprises.

The reports described below exclude establishments of firms with no paid employees. These “nonemployers,” typically self-employed individuals or partnerships operating businesses that they have not chosen to incorporate, are reported separately in Nonemployer Statistics. The contribution of nonemployers, relatively small for this sector, may be examined at [www.census.gov/nonemployerimpact](http://www.census.gov/nonemployerimpact).

The reports described below cover all manufacturing establishments with one or more paid employees.

**Definitions.** Industry categories are defined in Appendix B, NAICS Codes, Titles, and Descriptions. Other terms are defined in Appendix A, Explanation of Terms.

## REPORTS

The following reports provide statistics on this sector:

**Industry Series.** There are 473 reports, each covering a single NAICS industry (six-digit code). 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. The industry reports also include data for states with 100 employees or more in the industry. The data in industry reports are preliminary and subject to change in the following reports.

**Geographic Area Series.** There are 51 separate reports, one for each state and the District of Columbia. Each state report presents similar statistics at the “all manufacturing” level for each state and its metropolitan and micropolitan areas 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.

### Subject Series:

x Manufacturing

2002 Economic Census

- **Industry-Product Analysis Summary.** This report presents value of shipments, value of product shipments, percentage of product shipments of the total value of shipments, and percentage of distribution of value of product shipments on the NAICS six-digit industry level and by the six- and seven-digit product code levels. It also includes miscellaneous receipts at the six- and seven-digit product code levels by NAICS six-digit industry levels.
- **General Summary.** This 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.
- **Product Summary.** This report summarizes the products data published in the industry reports. This report also includes a table with data for products that are primary to more than one industry, which are not in the industry reports.
- **Materials Summary.** This report summarizes the materials data published in the industry reports.
- **Concentration Ratio Summary.** This report publishes data on the percentage of value of shipments and value added accounted for by the 4-, 8-, 20-, and 50-largest companies for each manufacturing industry. Also shown in this report are Herfindahl-Herschmann indexes for each industry.
- **Location of Manufacturing Plants Summary.** This report contains 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.

**ZIP Code Statistics.** This report contains statistics on the number of establishments for the three- and six-digit NAICS industry by employment-size of the establishment by ZIP Code.

**Other reports.** Data for this sector are also included in reports with multisector coverage, including Nonemployer Statistics, Comparative Statistics, Bridge Between 2002 NAICS and 1997 NAICS, Business Expenses, and the Survey of Business Owners reports.

## GEOGRAPHIC AREAS COVERED

The level of geographic detail varies by report. Maps are available at [www.census.gov/econ2002maps](http://www.census.gov/econ2002maps). Notes specific to areas in the state are included in Appendix D, Geographic Notes.

1. The United States as a whole.
2. States and the District of Columbia.
3. Metropolitan and micropolitan statistical areas with 250 employees or more. A core based statistical areas (CBSA) contains a core area with a substantial population nucleus, together with adjacent communities having a high degree of social and economic integration with that core. CBSAs are differentiated into metropolitan and micropolitan statistical areas based on size criteria. Both metropolitan and micropolitan areas are defined in terms of entire counties, and are listed in Appendix E, Metropolitan and Micropolitan Statistical Areas.
  - a. Metropolitan Statistical Areas (metro areas). Metro areas have at least one urbanized area of 50,000 or more population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties.
  - b. Micropolitan Statistical Areas (micro areas). Micro areas have at least one urban cluster of at least 10,000 but less than 50,000 population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties.
  - c. Metropolitan Divisions (metro divisions). If specified criteria are met, a metro area containing a single core with a population of 2.5 million or more may be subdivided to form smaller groupings of counties referred to as Metropolitan Divisions.

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- d. Combined Statistical Areas (combined areas). If specified criteria are met, adjacent metro and micro areas, in various combinations, may become the components of a new set of areas called Combined Statistical Areas. The areas that combine retain their own designations as metro or micro areas within the larger combined area.
4. Counties and county equivalents defined as of January 1, 2002, with 500 employees or more. Counties are the primary divisions of states, except in Louisiana where they are called parishes and in Alaska where they are called boroughs, census areas, and city and boroughs. Maryland, Missouri, Nevada, and Virginia have one place or more that is independent of any county organization and constitutes primary divisions of their states. These places are treated as counties and as places.
  5. Economic places with 500 employees or more.
    - a. Municipalities of 2,500 inhabitants or more defined as of January 1, 2002. These are areas of significant population incorporated as cities, boroughs, villages, or towns according to the 2000 Census of Population. For the economic census, boroughs and census areas in Alaska and boroughs in New York are not included in this category.
    - b. Consolidated cities defined as of January 1, 2002. Consolidated cities are consolidated governments that consist of separately incorporated municipalities.
    - c. Townships in Michigan, New Jersey, and Pennsylvania, and towns in New York, Wisconsin, and the six New England states with 10,000 inhabitants or more (according to the 2000 Census of Population).
    - d. Balance of county. Areas outside the entities listed above, including incorporated municipalities with populations of fewer than 2,500, town and townships not qualifying as noted above, and the remainders of counties outside places are categorized as "Balance of county."

## **DOLLAR VALUES**

All dollar values presented are expressed in current dollars; i.e., 2002 data are expressed in 2002 dollars, and 1997 data, in 1997 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.

## **COMPARABILITY OF THE 1997 AND 2002 ECONOMIC CENSUSES**

Both the 2002 Economic Census and the 1997 Economic Census present data based on the North American Industry Classification System (NAICS). While there were revisions to selected industries for 2002, this sector is not affected by those revisions.

For 2002, there have been several additional data tables added, which did not exist in 1997. These tables for 2002 include products primary to more than one industry, industry-product analysis, e-commerce value of shipments, and leased and nonleased detail employment statistics by subsectors.

## **RELIABILITY OF DATA**

All data compiled for this sector are subject to nonsampling errors. Nonsampling errors can be attributed to many sources: inability to identify all cases in the actual universe; definition and classification difficulties; differences in the interpretation of questions; errors in recording or coding the data obtained; and other errors of collection, response, coverage, processing, and estimation for missing or misreported data. Selected data in tables titled "Detailed Statistics" are based on the Annual Survey of Manufactures and are subject to sampling errors as well as nonsampling errors.

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No direct measurement of these effects has been obtained except for estimation for missing or misreported data, as by the percentages shown in the tables. Precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize the effects of nonsampling errors. More information on the reliability of the data is included in Appendix C, Methodology.

## **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 in a specific industry or geographic area is not considered a disclosure; therefore, this information may be released even though other information is withheld. Techniques employed to limit disclosure are discussed at [www.census.gov/epcd/ec02/disclosure.htm](http://www.census.gov/epcd/ec02/disclosure.htm).

The disclosure analysis for "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. Nonetheless, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures, which 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 55,000 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 the Current Industrial Reports (CIR) program. The CIR program publishes selected detailed product statistics for selected manufacturing industries at the U.S. level annually and, in some cases, monthly and/or quarterly. 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.

In addition, the County Business Patterns program offers annual statistics on the number of establishments, employment, and payroll classified by industry within each county, and Statistics of U.S. Businesses provides annual statistics classified by the employment size of the enterprise, further classified by industry for the United States, and by broader categories for states and metropolitan areas.

## **CONTACTS FOR DATA USERS**

Questions about these data may be directed to the U.S. Census Bureau, Manufacturing & Construction Division, Information Services Center, 301-763-4673 or [ask.census.gov](mailto:ask.census.gov).

## **ABBREVIATIONS AND SYMBOLS**

The following abbreviations and symbols are used with these 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
S	Withheld because estimates did not meet publication standards
X	Not applicable
Z	Less than half the unit shown
a	0 to 19 employees
b	20 to 99 employees
c	100 to 249 employees

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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
nsk	Not specified by kind
-	Represents zero (page image/print only)
(CC)	Consolidated city
(IC)	Independent city

**Table 1. Historical Statistics for the Industry: 2002 and Earlier Years**

[Data based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). For information on confidentiality protection, sampling error, nonsampling error, and explanation of terms, see note at end of table. For meaning of abbreviations and symbols, see introductory text]

Industry and year <sup>1</sup>	Com- panies <sup>2</sup>	All estab- lish- ments <sup>3</sup>	All employees		Production workers			Value added (\$1,000)	Total cost of materials (\$1,000)	Total value of shipments (\$1,000)	Total capital expendi- tures (\$1,000)
			Number <sup>4</sup>	Payroll (\$1,000)	Number <sup>4</sup>	Hours (1,000)	Wages (\$1,000)				
333120, Construction machinery manufacturing .....	2002.. 714	803	57 890	2 520 025	36 124	70 360	1 378 045	7 639 061	11 275 344	19 189 376	365 046
	2001.. N	N	67 129	2 753 485	43 731	85 565	1 539 929	8 373 518	12 095 538	20 587 760	399 733
	2000.. N	N	72 410	2 913 266	48 649	97 054	1 732 401	9 092 622	13 870 799	22 978 686	499 580
	1999.. N	N	72 176	2 923 783	48 520	97 259	1 717 093	8 462 693	13 441 165	21 920 703	572 739
	1998.. N	N	74 353	3 058 775	50 207	101 370	1 799 088	10 503 142	13 867 808	24 022 676	584 693
	1997.. 723	786	74 741	2 990 139	50 448	102 360	1 780 033	9 129 152	12 834 054	22 117 440	492 550

<sup>1</sup>Statistics presented for years ending in 2 and 7 are census data. Interim census years are derived in a representative sample of manufacturing establishments canvassed in the Annual Survey of Manufactures (ASM).

<sup>2</sup>For the census, a company is defined as a business organization consisting of one establishment or more under common ownership or control.

<sup>3</sup>Includes establishments with payroll at any time during the year.

<sup>4</sup>Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

Note: The data in this table are based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.



**Table 2. Industry Statistics for Selected States: 2002**

[States that are a disclosure or with less than 100 employees are not shown. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, explanation of terms, and geographical definitions, see note at end of table. For information on geographic areas followed by \*, see Appendix D. For meaning of abbreviations and symbols, see introductory text]

Industry and geographic area	All establishments <sup>2</sup>			All employees		Production workers			Value added (\$1,000)	Total cost of materials (\$1,000)	Total value of shipments (\$1,000)	Total capital expenditures (\$1,000)
	E <sup>1</sup>	Total	With 20 employees or more	Number <sup>3</sup>	Payroll (\$1,000)	Number <sup>3</sup>	Hours (1,000)	Wages (\$1,000)				
<b>333120, Construction machinery manufacturing</b>												
United States .....	1	803	355	57 890	2 520 025	36 124	70 360	1 378 045	7 639 061	11 275 344	19 189 376	'365 046
Alabama .....	—	10	2	622	29 094	448	785	17 710	14 664	142 855	166 510	'1 697
Arizona .....	5	7	4	270	12 353	216	380	8 667	23 812	37 470	61 368	'280
California .....	4	65	16	926	38 612	610	1 231	22 529	87 241	74 037	161 418	'4 976
Florida .....	4	25	8	522	18 619	365	685	11 006	45 166	58 090	104 593	'2 293
Georgia .....	7	14	7	647	27 560	424	892	15 925	129 611	210 107	342 515	'6 914
Idaho .....	2	9	4	339	12 199	213	459	7 006	18 925	34 048	53 201	'834
Illinois .....	—	53	27	8 928	511 921	5 026	11 288	260 839	1 495 034	2 755 851	4 462 918	'120 292
Indiana .....	1	29	9	1 083	43 147	690	1 135	24 104	91 886	153 829	249 515	'3 711
Kansas .....	—	22	13	1 940	77 104	1 351	2 921	39 494	292 974	361 379	661 499	'8 520
Kentucky .....	—	12	9	1 154	42 571	866	1 266	26 920	77 479	183 041	273 038	'9 238
Michigan .....	—	27	17	1 103	44 043	783	1 560	27 363	134 182	142 996	280 475	'3 896
Minnesota .....	—	32	14	1 574	70 673	983	1 862	35 616	139 360	233 546	396 477	'14 554
New Mexico .....	2	6	1	106	4 232	85	176	2 870	7 127	8 274	15 548	'187
New York .....	3	28	10	714	29 097	467	821	16 373	59 194	74 593	133 012	'3 835
North Carolina .....	—	21	15	2 562	110 608	1 763	3 298	64 911	595 775	1 455 401	2 000 065	'15 200
Ohio .....	1	49	23	2 018	75 900	1 383	2 821	44 011	233 509	203 848	459 078	'6 857
Oklahoma .....	3	23	12	2 573	95 750	1 584	3 060	47 237	274 651	287 447	552 798	'8 705
Oregon .....	6	19	5	679	30 493	386	770	15 116	58 261	73 491	131 793	'3 618
Pennsylvania .....	—	33	19	3 339	154 196	2 124	4 291	82 218	340 330	585 811	921 006	'16 348
South Dakota .....	—	14	10	1 211	41 777	825	1 712	24 523	119 415	140 331	266 722	'1 929
Tennessee .....	2	19	9	2 328	95 878	1 678	3 183	60 777	265 178	482 548	743 045	'10 093
Texas .....	3	47	18	2 721	103 245	1 749	3 591	59 549	162 727	272 440	418 430	'8 477
Utah .....	3	7	3	128	4 071	93	158	2 462	16 884	9 722	27 009	'851
Virginia .....	2	11	6	443	16 666	308	601	8 894	37 206	62 143	99 206	'1 900
Washington .....	2	23	5	372	15 792	211	433	7 718	38 511	33 280	70 540	'1 925
Wisconsin .....	—	53	32	5 989	287 563	3 398	5 773	147 718	744 317	907 251	1 673 468	'37 233

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

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

<sup>3</sup>Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C. For geographical definitions, see Appendix D.

**Table 3. Detailed Statistics by Industry: 2002**

[Data based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). For information on confidentiality protection, sampling error, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

Item	Value
<b>333120, Construction machinery manufacturing</b>	
Companies <sup>1</sup> .....	number.. 714
All establishments <sup>2</sup> .....	number.. 803
Establishments with 1 to 19 employees .....	number.. 448
Establishments with 20 to 99 employees .....	number.. 241
Establishments with 100 employees or more .....	number.. 114
All employees <sup>3</sup> .....	number.. 57 890
Total compensation .....	\$1,000.. 3 332 353
Annual payroll .....	\$1,000.. 2 520 025
Total fringe benefits .....	\$1,000.. 812 328
Production workers, average for year .....	number.. 36 124
Production workers on March 12 .....	number.. 35 834
Production workers on May 12 .....	number.. 37 019
Production workers on August 12 .....	number.. 36 441
Production workers on November 12 .....	number.. 35 120
Production worker hours .....	1,000.. 70 360
Production worker wages .....	\$1,000.. 1 378 045
Total cost of materials .....	\$1,000.. 11 275 344
Materials, parts, containers, packaging, etc., used .....	\$1,000.. 9 620 949
Resales .....	\$1,000.. 1 380 125
Purchased fuels .....	\$1,000.. 51 180
Purchased electricity .....	\$1,000.. 75 897
Contract work .....	\$1,000.. 147 193
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 1 546 360
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. D
Total value of shipments .....	\$1,000.. 19 189 376
Primary products value of shipments .....	\$1,000.. 16 067 160
Secondary products value of shipments .....	\$1,000.. 1 131 232
Total miscellaneous receipts .....	\$1,000.. 1 990 984
Value of resales .....	\$1,000.. 1 811 080
Contract receipts .....	\$1,000.. 11 978
Other miscellaneous receipts .....	\$1,000.. 167 926
Primary products specialization ratio .....	percent.. 93
Value of primary products shipments made in all industries .....	\$1,000.. 16 588 722
Value of primary products shipments made in this industry .....	\$1,000.. 16 067 160
Value of primary products shipments made in other industries .....	\$1,000.. 521 562
Coverage ratio .....	percent.. 97
Value added .....	\$1,000.. 7 639 061
Total inventories, beginning of year .....	\$1,000.. 3 468 379
Finished goods inventories .....	\$1,000.. 1 402 489
Work-in-process inventories .....	\$1,000.. 916 680
Materials and supplies inventories .....	\$1,000.. 1 149 210
Total inventories, end of year .....	\$1,000.. 3 182 211
Finished goods inventories .....	\$1,000.. 1 259 680
Work-in-process inventories .....	\$1,000.. 784 518
Materials and supplies inventories .....	\$1,000.. 1 138 013
Gross value of depreciable assets (acquisition costs) at beginning of year .....	\$1,000.. '5 969 044
Total capital expenditures (new and used) .....	\$1,000.. '365 046
Buildings and other structures (new and used) .....	\$1,000.. '75 330
Machinery and equipment (new and used) .....	\$1,000.. '289 716
Automobiles, trucks, etc., for highway use .....	\$1,000.. '10 592
Computers and peripheral data processing equipment .....	\$1,000.. '33 648
All other expenditures for machinery and equipment .....	\$1,000.. '245 476
Total retirements .....	\$1,000.. '548 685
Gross value of depreciable assets at end of year .....	\$1,000.. '5 785 405
Depreciation charges during year .....	\$1,000.. '388 638
Total rental payments .....	\$1,000.. 133 460
Buildings and other structures .....	\$1,000.. 61 148
Machinery and equipment .....	\$1,000.. 72 312
Total other expenses <sup>4</sup> .....	\$1,000.. 778 372
Response coverage ratio <sup>5</sup> .....	percent.. 89
Repair and maintenance services of buildings and/or machinery <sup>4</sup> .....	\$1,000.. 91 736
Communications services <sup>4</sup> .....	\$1,000.. 31 774
Legal services <sup>4</sup> .....	\$1,000.. 31 998
Accounting, auditing, and bookkeeping services <sup>4</sup> .....	\$1,000.. 7 851
Advertising and promotional services <sup>4</sup> .....	\$1,000.. 44 344
Expensed computer hardware and supplies and purchased computer services <sup>4</sup> .....	\$1,000.. 26 437
Refuse removal (including hazardous waste) services <sup>4</sup> .....	\$1,000.. 8 002
Management consulting and administrative services <sup>4</sup> .....	\$1,000.. 40 691
Taxes and license fees <sup>4</sup> .....	\$1,000.. 29 420
All other expenses <sup>4</sup> .....	\$1,000.. 466 119

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

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

<sup>3</sup>Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

<sup>4</sup>Based on 2002 Annual Survey of Manufactures (ASM) sample data.

<sup>5</sup>A response coverage ratio is derived for this item by calculating the ratio of the weighted employment (establishment data multiplied by sample weight) for those Annual Survey of Manufactures (ASM) establishments that reported to the weighted total employment for all ASM establishments classified in this industry.

Note 1: The amounts shown for other expenses reflect only those services that establishments purchase from other companies.

Note 2: The data in this table are based on the 2002 Economic Census and the 2002 Annual Survey of Manufactures (ASM). To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

**Table 4. Industry Statistics by Employment Size: 2002**

[Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note at end of table. For meaning of abbreviations and symbols, see introductory text]

Employment size class	E <sup>1</sup>	All establishments <sup>2</sup>	All employees		Production workers			Value added (\$1,000)	Total cost of materials (\$1,000)	Total value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number <sup>3</sup>	Payroll (\$1,000)	Number <sup>3</sup>	Hours (1,000)	Wages (\$1,000)				
<b>333120, Construction machinery manufacturing</b>											
All establishments .....	1	803	57 890	2 520 025	36 124	70 360	1 378 045	7 639 061	11 275 344	19 189 376	'365 046
Establishments with—											
1 to 4 employees .....	8	223	499	19 578	328	570	10 995	55 277	58 823	111 506	'3 720
5 to 9 employees .....	7	103	706	30 173	432	857	16 366	71 741	97 065	169 454	'3 558
10 to 19 employees .....	4	122	1 689	67 220	1 060	2 011	35 969	137 086	183 108	322 024	'6 642
20 to 49 employees .....	2	144	4 537	170 581	2 981	5 967	94 328	429 307	479 065	909 002	'20 075
50 to 99 employees .....	2	97	6 800	261 317	4 652	9 320	149 556	595 685	763 507	1 367 794	'31 596
100 to 249 employees .....	2	63	9 707	377 411	6 466	12 293	211 396	1 012 030	1 624 695	2 703 502	'62 214
250 to 499 employees .....	1	25	8 392	358 806	5 708	11 290	201 517	1 331 102	1 997 062	3 301 380	'34 255
500 to 999 employees .....	—	18	11 897	550 998	7 189	13 110	306 517	1 587 745	2 416 005	4 099 765	58 268
1,000 to 2,499 employees .....	—	8	13 663	683 941	7 308	14 942	351 401	2 419 088	3 656 014	6 204 949	144 718
2,500 employees or more .....	—	—	—	—	—	—	—	—	—	—	—
Administrative records <sup>4</sup> .....	9	311	1 677	71 234	1 070	2 076	39 721	147 194	225 951	373 138	'8 633

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

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

<sup>3</sup>Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

<sup>4</sup>Some payroll and sales data for small single-establishment companies with up to 20 employees (cutoff varied by industry) were obtained from administrative records of other government agencies rather than from census report forms. These data were then used in conjunction with industry averages to estimate statistics for these small establishments. Data are also included in respective size classes shown.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

**Table 5. Industry Statistics by Primary Product Class Specialization: 2002**

[Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note at end of table. For meaning of abbreviations and symbols, see introductory text]

Industry or product class code	Industry or primary product class	All establishments <sup>1</sup>	All employees		Production workers			Value added (\$1,000)	Total cost of materials (\$1,000)	Total value of shipments (\$1,000)	Total capital expenditures (\$1,000)
			Number <sup>2</sup>	Payroll (\$1,000)	Number <sup>2</sup>	Hours (1,000)	Wages (\$1,000)				
333120	Construction machinery manufacturing .....	803	57 890	2 520 025	36 124	70 360	1 378 045	7 639 061	11 275 344	19 189 376	'365 046
3331201	Power cranes, excavation loaders, dozers, construction tractors, off-highway trucks and trailers, mixers, pavers, backhoes, and related equipment .....	186	34 409	1 630 991	20 851	41 556	868 137	5 660 082	8 572 122	14 474 410	'260 393
3331208	Other construction machinery and equipment (excluding parts) .....	116	11 108	391 256	7 078	13 228	219 366	892 068	1 463 009	2 395 893	'51 824
3331209	Parts for construction machinery and equipment, sold separately .....	85	8 789	354 178	5 904	11 259	212 056	790 063	858 854	1 644 459	'32 309

<sup>1</sup>Includes establishments with payroll at any time during the year.

<sup>2</sup>Number of employees figures represent average number of production workers for pay period that includes the 12th of March, May, August, and November plus other employees for payroll period that includes the 12th of March.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

**Table 6a. Products Statistics: 2002 and 1997**

[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. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

Product code	Product	Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)
333120	Construction machinery manufacturing .....	2002.. N 1997.. N	X X	X X	16 588 722 19 287 496
3331201	Power cranes, excavation loaders, dozers, construction tractors, off-highway trucks and trailers, mixers, pavers, backhoes, and related equipment .....	2002.. N 1997.. N	X X	X X	11 913 788 13 693 995
33312011	Power cranes, draglines, and shovels (excavators) (including surface mining equipment and attachments) (excluding parts) .....	2002.. N 1997.. N	X X	X X	2 561 640 3 035 538
3331201110	Power cranes, draglines, and shovels (excavators) (including surface mining equipment and attachments) (excluding parts) <sup>1</sup> .....	2002.. 55 1997.. 57	X X	X X	2 561 640 3 035 538
33312012	Mixers, pavers, and related equipment (excluding parts) .....	2002.. N 1997.. N	X X	X X	1 145 807 1 261 445
3331201220	Mixers, pavers, and related equipment (excluding parts) <sup>1</sup> .....	2002.. 66 1997.. 76	X X	X X	1 145 807 1 261 445
33312013	Off-highway trucks, coal haulers, truck-type tractor chassis, trailers and wagons (excluding parts) .....	2002.. N 1997.. N	X X	X X	948 082 1 288 613
3331201330	Off-highway trucks, coal haulers, truck-type tractor chassis, trailers and wagons (excluding parts) <sup>1</sup> .....	2002.. 27 1997.. 34	X X	X X	948 082 1 288 613
33312014	Tractor shovel loaders (skid steer, wheel, and crawler, and integral-design loader-backhoes) .....	2002.. N 1997.. N	X X	X X	1 288 115 2 829 877
3331201440	Tractor shovel loaders (skid steer, wheel, and crawler, and integral-design loader-backhoes) <sup>1</sup> .....	2002.. 13 1997.. 22	X X	X X	1 288 115 2 829 877
33312015	Construction wheel and crawler tractors, dozers, and self-propelled log skidders .....	2002.. N 1997.. N	X X	X X	4 106 899 2 678 905
3331201550	Construction wheel and crawler tractors, dozers, and self-propelled log skidders <sup>1</sup> .....	2002.. 21 1997.. 22	X X	X X	4 106 899 2 678 905
33312016	Motor graders and light maintainers, including rollers and compactors, rough-terrain forklifts, scraper bowls, and self-propelled continuous ditchers and trenchers (except parts) .....	2002.. N 1997.. N	X X	X X	1 313 075 2 068 782
3331201660	Motor graders and light maintainers, including rollers and compactors, rough-terrain forklifts, scraper bowls, and self-propelled continuous ditchers and trenchers (except parts) <sup>1</sup> .....	2002.. 35 1997.. 56	X X	X X	1 313 075 2 068 782
33312017	Construction machinery for mounting on tractors and other prime movers (excluding parts, winches, and snow clearing attachments) .....	2002.. N 1997.. N	X X	X X	526 143 525 023
3331201770	Construction machinery for mounting on tractors and other prime movers (excluding parts, winches, and snow clearing attachments) <sup>1</sup> .....	2002.. 54 1997.. 47	X X	X X	526 143 525 023
3331201Y	Power cranes, excavation loaders, dozers, construction tractors, off-highway trucks and trailers, mixers, pavers, backhoes, and related equipment, nsk .....	2002.. N 1997.. N	X X	X X	24 027 5 812
3331201YVV	Motor graders and light maintainers, rollers and compactors, rough-terrain forklifts, scraper bowls, and self-propelled continuous ditchers and trenchers, except parts .....	2002.. N 1997.. N	X X	X X	24 027 5 812
3331208	Other construction machinery and equipment (excluding parts) .....	2002.. N 1997.. N	X X	X X	1 879 437 2 122 257
33312081	Other construction machinery and equipment (excluding parts) .....	2002.. N 1997.. N	X X	X X	1 867 121 2 094 867
3331208110	Portable crushing plants, screening plants, washing plants, and combination plants (excluding parts) .....	2002.. 29 1997.. 21	X X	X X	153 004 168 287
3331208115	Snow clearing attachments for mounting on tractors or trucks (except rotary snow blowers), including snow plows, etc. (excluding parts) .....	2002.. 31 1997.. 32	X X	X X	276 069 272 596
3331208126	Commercial brush, limb, and log chippers for waste wood reduction (excluding parts) .....	2002.. 19 1997.. 13	X X	X X	200 790 130 305
3331208127	Log splitters (excluding parts) .....	2002.. 4 1997.. 5	X X	X X	D 13 023
3331208135	Dredging machinery, hydraulic and other types (excluding parts) .....	2002.. 5 1997.. 6	X X	X X	15 011 24 431
3331208144	Digger-derricks (excluding parts) .....	2002.. 5 1997.. 7	X X	X X	D 87 424
3331208148	Vertical earth augers and power posthole diggers, excluding water well and blasthole drills (excluding parts) .....	2002.. 15 1997.. 17	X X	X X	D 34 848
3331208152	Horizontal earth boring machines and accessories (excluding parts) .....	2002.. 12 1997.. 11	X X	X X	104 378 176 916
3331208156	Pile driving equipment (including air, steam, and diesel pile hammers and impact pile and vibratory driver extractors) (excluding parts) .....	2002.. 6 1997.. 8	X X	X X	35 594 21 560
3331208199	All other construction machinery and equipment, complete units .....	2002.. 81 1997.. 67	X X	X X	815 400 1 165 477
3331208Y	Other construction machinery and equipment (excluding parts), nsk .....	2002.. N 1997.. N	X X	X X	12 316 27 390

See footnotes at end of table.

**Table 6a. Products Statistics: 2002 and 1997—Con.**

[Includes quantity and value of products of this industry produced by (1) establishments classified in this industry (primary) and (2) establishments classified in other industries (secondary). Transfers of products of this industry from one establishment of a company to another establishment of the same company (interplant transfers) are also included. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

Product code	Product	Number of companies with shipments of \$100,000 or more	Quantity of production for all purposes	Product shipments	
				Quantity	Value (\$1,000)
333120	Construction machinery manufacturing—Con.				
3331208	Other construction machinery and equipment (excluding parts)—Con.				
3331208Y	Other construction machinery and equipment (excluding parts), nsk—Con.				
3331208YVV	Other construction machinery and equipment (excluding parts), nsk	2002.. N 1997.. N	X X	X X	12 316 27 390
3331209	Parts for construction machinery and equipment, sold separately	2002.. N 1997.. N	X X	X X	2 263 373 2 968 564
33312091	Parts for power cranes, draglines, and shovels (excavators) (including surface mining equipment) (sold separately)	2002.. N 1997.. N	X X	X X	617 699 538 500
3331209111	Parts for power cranes, draglines, and shovels (excavators) (including surface mining equipment) (sold separately)	2002.. 51 1997.. 47	X X	X X	617 699 538 500
33312092	Parts for contractors' off-highway wheel tractors, crawler tractors, and tractor shovel loaders (sold separately)	2002.. N 1997.. N	X X	X X	618 403 940 000
3331209245	Parts for contractors' off-highway wheel tractors, crawler tractors, and tractor shovel loaders (sold separately)	2002.. 34 1997.. 41	X X	X X	618 403 940 000
33312093	Parts for other construction machinery	2002.. N 1997.. N	X X	X X	977 437 1 421 630
3331209352	Parts for mixers, pavers, and related equipment (sold separately)	2002.. 40 1997.. 44	X X	X X	158 914 211 634
3331209353	Parts for off-highway trucks, coal haulers, truck-type tractor chassis, trailers and wagons (sold separately)	2002.. 26 1997.. 23	X X	X X	114 932 130 627
3331209366	Parts for motor graders and light maintainers, rollers and compactors, rough-terrain forklifts, scraper bowls, and self-propelled continuous ditchers and trenchers (sold separately)	2002.. 38 1997.. 42	X X	X X	177 459 179 054
3331209377	Parts for construction machinery (except winches) for mounting on tractors and other prime movers (sold separately)	2002.. 38 1997.. 30	X X	X X	160 648 237 747
3331209388	Parts for other construction machinery and equipment (except winches, hoists, and railroad rolling stock) (sold separately)	2002.. 74 1997.. 86	X X	X X	365 484 662 568
3331209Y	Parts for construction machinery and equipment, sold separately, nsk	2002.. N 1997.. N	X X	X X	49 834 68 434
3331209YVV	Parts for construction machinery and equipment, sold separately, nsk	2002.. N 1997.. N	X X	X X	49 834 68 434
333120W	Construction machinery manufacturing, nsk, total	2002.. N 1997.. N	X X	X X	532 124 502 680
333120WY	Construction machinery manufacturing, nsk, total	2002.. N 1997.. N	X X	X X	532 124 502 680
333120WYWW	Construction machinery manufacturing, nsk, for nonadministrative-record establishments	2002.. N 1997.. N	X X	X X	257 343 313 717
333120WYWY	Construction machinery manufacturing, nsk, for administrative-record establishments	2002.. N 1997.. N	X X	X X	274 781 188 963

<sup>1</sup>For additional detail, see Current Industrial Report MA333D, Construction Machinery.

Note 1: For some establishments, data have been estimated from central unit values that 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.

Note 2: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

**Table 6b. Product Class Shipments for Selected States: 2002 and 1997**

[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 2002. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, explanation of terms, and geographic definitions, see note at end of table. For information on geographic areas followed by \*, see Appendix D. For meaning of abbreviations and symbols, see introductory text]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)	
3331201	Power cranes, excavation loaders, dozers, construction tractors, off-highway trucks and trailers, mixers, pavers, backhoes, and related equipment		
	United States .....	2002.. 11 913 788 1997.. 13 693 995	
	California .....	2002.. 13 347 1997.. 38 223	
	Florida .....	2002.. 73 871 1997.. 20 361	
	Georgia .....	2002.. 322 784 1997.. 332 111	
	Idaho .....	2002.. 6 119 1997.. N	
	Illinois .....	2002.. 3 534 315 1997.. N	
	Indiana .....	2002.. 138 665 1997.. N	
	Kansas .....	2002.. 481 286 1997.. 424 762	
	Michigan .....	2002.. 67 846 1997.. 79 680	
	Minnesota .....	2002.. 314 712 1997.. 559 214	
	New York .....	2002.. 60 546 1997.. 73 329	
	North Carolina .....	2002.. 1 551 575 1997.. 384 051	
	Ohio .....	2002.. 173 640 1997.. 389 697	
	Oklahoma .....	2002.. 360 984 1997.. 313 841	
	Oregon .....	2002.. 68 341 1997.. 75 477	
	Pennsylvania .....	2002.. 358 159 1997.. 969 672	
	South Dakota .....	2002.. 143 729 1997.. 165 544	
	Texas .....	2002.. 161 279 1997.. 289 443	
	Washington .....	2002.. 18 053 1997.. 42 552	
	Wisconsin .....	2002.. 622 397 1997.. 996 283	
	3331208	Other construction machinery and equipment (excluding parts)	
		United States .....	2002.. 1 879 437 1997.. 2 122 257
		California .....	2002.. 29 664 1997.. 17 826
		Idaho .....	2002.. 34 343 1997.. N
		Illinois .....	2002.. 22 754 1997.. 76 894
		Indiana .....	2002.. 34 575 1997.. 40 382
Kansas .....		2002.. 52 533 1997.. 67 811	
Michigan .....		2002.. 175 226 1997.. 33 963	
Minnesota .....		2002.. 43 357 1997.. 50 359	
New York .....		2002.. 28 037 1997.. 14 703	
Ohio .....		2002.. 110 027 1997.. 105 093	
Oklahoma .....		2002.. 38 814 1997.. N	
Oregon .....		2002.. 10 076 1997.. 13 777	
Pennsylvania .....		2002.. 166 692 1997.. 72 561	
Texas .....		2002.. 67 250 1997.. 53 335	
Washington .....		2002.. 10 809 1997.. 59 923	
Wisconsin .....		2002.. 324 559 1997.. 224 139	
3331209		Parts for construction machinery and equipment, sold separately	
		United States .....	2002.. 2 263 373 1997.. 2 968 564
		California .....	2002.. 53 198 1997.. 14 063
	Florida .....	2002.. 2 192 1997.. N	
	Illinois .....	2002.. 450 575 1997.. 867 062	
	Indiana .....	2002.. 50 822 1997.. 55 577	
	Kansas .....	2002.. 45 623 1997.. 96 620	
	Minnesota .....	2002.. 21 204 1997.. 81 831	
	New York .....	2002.. 22 618 1997.. 18 313	
	North Carolina .....	2002.. 82 742 1997.. N	
	Ohio .....	2002.. 115 803 1997.. 115 412	
	Oklahoma .....	2002.. 109 058 1997.. 86 726	

See footnotes at end of table.

Table 6b. **Product Class Shipments for Selected States: 2002 and 1997—Con.**

[Product classes covered are those that are economically significant and whose production is geographically dispersed, provided dispersion is not approximated by data in Table 2. Also, product classes are not shown if they are miscellaneous or "not specified by kind" classes. Statistics for some states are withheld because they are either less than \$2 million in product class shipments or they disclose data for individual companies in 2002. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, explanation of terms, and geographic definitions, see note at end of table. For information on geographic areas followed by \*, see Appendix D. For meaning of abbreviations and symbols, see introductory text]

NAICS product class code	Product class and geographic area	Value of product shipments (\$1,000)
3331209	Parts for construction machinery and equipment, sold separately—Con.	
	United States—Con.	
	Oregon .....	2002.. 15 878 1997.. 16 059
	Pennsylvania .....	2002.. 143 271 1997.. 100 172
	South Dakota .....	2002.. 34 994 1997.. 51 168
	Texas .....	2002.. 89 721 1997.. 102 661
	Virginia .....	2002.. 28 802 1997.. N
	Washington .....	2002.. 15 975 1997.. 25 538
	Wisconsin .....	2002.. 423 596 1997.. 327 537

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C. For geographical definitions, see Appendix D.



**Table 7. Materials Consumed by Kind: 2002 and 1997**

[Includes quantity and cost of materials consumed or put into production by establishments classified only in this industry. Data based on the 2002 Economic Census. For information on confidentiality protection, nonsampling error, and explanation of terms, see note 2 at end of table. For meaning of abbreviations and symbols, see introductory text]

Material code	Material consumed	Quantity	Delivered cost (\$1,000)
333120	Construction machinery manufacturing		
00900001	Total materials .....	2002.. X	9 620 949
		1997.. X	11 268 087
33399601	Fluid power pumps, motors, and hydrostatic transmissions (hydraulic and pneumatic) .....	2002.. X	445 352
		1997.. X	724 526
33399501	Fluid power cylinders and rotary actuators (hydraulic and pneumatic) .....	2002.. X	181 842
		1997.. X	267 012
33291203	Fluid power hose and tube fittings and assemblies (hydraulic and pneumatic) .....	2002.. X	123 872
		1997.. X	189 571
33291207	Fluid power valves (hydraulic and pneumatic) .....	2002.. X	214 807
		1997.. X	277 006
33272203	Metal bolts, nuts, screws, washers, rivets, and other screw machine products .....	2002.. X	152 985
		1997.. X	173 649
33200099	Fabricated structural metal products (excluding forgings) .....	2002.. X	459 570
		1997.. X	700 075
33261003	Fabricated metal wire products (including wire rope, cable, springs, etc.) .....	2002.. X	31 614
		1997.. X	N
33200065	All other fabricated metal products (excluding forgings, castings, metal stampings, bolts, nuts, washers, rivets, screw machine products, and structural metal products) .....	2002.. X	216 404
		1997.. X	224 020
332000AC	Metal stampings .....	2002.. X	53 199
		1997.. X	148 829
33210000	Forgings .....	2002.. X	119 509
		1997.. X	N
33151001	Iron and steel castings (rough and semifinished) .....	2002.. X	499 447
		1997.. X	678 708
33152011	Nonferrous (aluminum, copper, etc.) castings (rough and semifinished) .....	2002.. X	23 639
		1997.. X	19 965
33120007	Steel bars, bar shapes, and plate (excluding castings, forgings, and fabricated metal products) .....	2002.. X	363 894
		1997.. X	697 563
33120016	Steel sheet and strip (including tinplate) .....	2002.. X	145 154
		1997.. X	N
33120019	Steel structural shapes and sheet piling (excluding castings, forgings, and fabricated metal products) .....	2002.. X	34 346
		1997.. X	165 503
33120091	All other steel shapes and forms (excluding castings, forgings, fabricated metal products, bars, bar shapes, plate, sheet, strip, structural shapes, and sheet piling) .....	2002.. X	122 955
		1997.. X	138 306
331000AJ	Nonferrous metal shapes and forms (excluding castings, forgings, and fabricated metal products) .....	2002.. X	10 781
		1997.. X	8 892
33361803	Diesel engines and parts specially designed for diesel engines .....	2002.. X	516 600
		1997.. X	N
33631200	Gasoline engines and parts specially designed for gasoline engines .....	2002.. X	67 669
		1997.. X	N
33531201	Electric motors and generators .....	2002.. X	120 432
		1997.. X	194 378
33299105	Ball bearings (mounted or unmounted) .....	2002.. X	28 610
		1997.. X	85 445
33299103	Roller bearings (mounted or unmounted) .....	2002.. X	39 070
		1997.. X	74 703
33361200	Mechanical speed changers, gears, and industrial high-speed drives .....	2002.. X	172 403
		1997.. X	261 268
32621003	Pneumatic tires and inner tubes .....	2002.. X	231 224
		1997.. X	N
33639909	Wheels, motor vehicle .....	2002.. X	47 140
		1997.. X	N
33600001	Purchased chassis for vehicles (excluding passenger cars) .....	2002.. X	176 995
		1997.. X	N
33635003	Transmissions and parts .....	2002.. X	245 411
		1997.. X	N
33632200	Engine electrical equipment (including spark plugs, magnetos, generators, starters, etc.) .....	2002.. X	145 351
		1997.. X	N
33633000	Shocks, struts, and other suspension equipment and parts .....	2002.. X	66 255
		1997.. X	N
32622001	Rubber and plastics hose and belting .....	2002.. X	77 665
		1997.. X	96 770
32610007	Fabricated plastics products (excluding gaskets, hoses, and belting) .....	2002.. X	42 096
		1997.. X	56 612
32551002	Paints, varnishes, stains, lacquers, shellacs, japans, enamels, and allied product .....	2002.. X	37 326
		1997.. X	N
001900B1	Electrical transmission, distribution, and control equipment .....	2002.. X	170 197
		1997.. X	336 997
00970099	All other materials and components, parts, containers, and supplies .....	2002.. X	2 447 156
		1997.. X	5 224 128
00971000	Materials, ingredients, containers, and supplies, nsk .....	2002.. X	1 789 979
		1997.. X	524 161

Note 1: For some establishments, data have been estimated from central unit values that 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.

Note 2: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

# Appendix A.

## Explanation of Terms

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

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

### **Inventory data by stage of fabrication**

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

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

### **COST OF MATERIALS**

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

Included in this item are:

1. Cost of parts, components, containers, etc. Includes all raw materials, semifinished goods, parts, containers, scrap, and supplies put into production or used as operating supplies and for repair and maintenance during the year.
2. Cost of products bought and sold in the same condition.
3. Cost of fuels consumed for heat and power. Includes the cost of materials or fuel consumed, whether purchased by the individual establishment from other companies, transferred to it from other establishments of the same company, or withdrawn from inventory during the year.
4. Cost of purchased electricity. The cost of purchased electric energy represents the amount actually used during the year for heat and power. In addition, information was collected on the quantity of electric energy generated by the establishment and the quantity of electric energy sold or transferred to other plants of the same company.
5. Cost of contract work. This term applies to work done by others on materials furnished by the manufacturing establishment. The actual cost of the material is to be reported on the cost of materials, parts, and containers line of this item. The term “Contract Work” refers to the fee a company pays to another company to perform a service.

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## **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 that 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.

## **SELECTED PURCHASED SERVICES**

Annual Survey of Manufactures (ASM) establishments were requested to provide information on the cost of selected purchased services for the repair and maintenance services of buildings and/or machinery; communication services; legal services; accounting, auditing, and bookkeeping services; advertising and promotional services; expensed computer hardware and supplies and purchased computer services; refuse removal services; management consulting and administrative services; taxes and license fees; and all other expenses not previously stated. Each of these items reflects the costs paid directly by the establishment and excludes salaries paid to employees of the establishment for these services. These expenses are normally considered as nonproduction related costs purchased from other companies.

Included in the cost of selected purchased services for the repair and maintenance services of buildings and/or 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. Excluded from this item are extensive repairs or reconstruction that was capitalized, which is considered capital expenditures; costs incurred directly by the establishment in using its own work force to perform repairs and maintenance work; and repairs and maintenance provided by the building or machinery owner as part of the rental contract.

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Included in the cost of selected purchased services for communication is the actual expense incurred or payable during the year for any type of communication. Such types of communication include telephone, data transmission, telegraph, Internet, connectivity, FAX, telex, photo transmission, paging, cellular telephone, on-line access and related services, etc.

Included in the cost of selected purchased services for legal services are payments made to other companies for these services that were paid directly by the establishment. Excluded are the salaries paid to employees of the establishment for these services.

Included in the cost of selected accounting, auditing, and bookkeeping services are payments made to other companies for these services that were paid directly by the establishment. Excluded are the salaries paid to employees of this establishment for these services.

Included in the cost of selected advertising and promotional services are payments made to other companies for these services that were paid directly by the establishment. These include payments for printing, media coverage, and other services and materials. Excluded are the salaries paid to employees of this establishment for these services.

Included in the cost of selected expensed computer hardware and supplies and purchased computer services are actual expenses incurred or payable during the year for this item. Purchases for computer hardware and supplies, computer services (software, data transmission, processing services, Web design, etc.) are all included. Excluded are services provided by other establishments of the same company (such as a separate central data processing unit).

Included in the cost of selected purchased refuse removal services are payments made to other companies for these services that were paid directly by the establishment, including costs for hazardous waste removal or treatment. Excluded are all costs included in rental payments or as capital expenditures and the salaries paid to employees of the establishment for these services.

Included in the cost of selected purchased management consulting and administrative services are payments made to other companies for these services that were paid directly by the establishment. Excluded are the salaries paid to employees of this establishment for these services.

Included in the cost of selected purchased taxes and license fees are payments made to other companies for these services that were paid directly by the establishment, excluding income, sales, payroll, and excise taxes. Excluded are also the salaries paid to employees of this establishment for these services.

### **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 nonreporters).

### **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.

### **NUMBER OF 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 that included the 12th of the months specified on the report form. Included are employees on paid sick leave, paid holidays, and paid vacations; not included are proprietors and partners of unincorporated businesses.

These individuals comprise of all full-time and part-time employees who are on the payrolls of establishments who worked or received pay for any part of the pay period including the 12th of March, May, August, and November.

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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**

The “production workers” number 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**

The “other employees” 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.

### **TOTAL FRINGE BENEFITS**

This item is the employer’s costs for social security tax, unemployment tax, workmen’s compensation insurance, state disability insurance pension plans, stock purchase plans, union-negotiated benefits, life insurance premiums, and insurance premiums on hospital and medical plans for employees.

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 VALUE OF DEPRECIABLE ASSETS (ACQUISITION COSTS) 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 (BOY) and end of year (EOY). 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.

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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.

## **ESTABLISHMENT**

An establishment is a single physical location where business is conducted or where services or industrial operations are performed. Data in this sector includes those establishments where manufacturing is performed. A separate report was required for each manufacturing establishment (plant) with one employee or more that were in operation at any time during the year.

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.

## **Company**

A company or ("enterprise") is comprised of all the establishments that operate under the ownership or control of a single organization. A company may be a business, service, or membership organization; consist of one or several establishments; and operate at one or several locations. It includes all subsidiary organizations, all establishments that are majority-owned by the company or any subsidiary, and all the establishments that can be directed or managed by the company or any subsidiary.

A company may have one or many establishments. Examples include product and service sales offices (retail and wholesale), industrial production plants, processing or assembly operations, mines or well sites, and support operations (such as an administrative office, warehouse, customer service center, or regional headquarters). Each establishment should receive, complete, and return a separate census form.

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.

## **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. 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.

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

In the manufacturing sector for 2002, 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). Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. There are 1,450 product classes (seven-digit codes), 5,674 census products, and an additional 3,746 ten-digit product 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.

### **PRODUCTION-WORKER HOURS**

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

### **QUANTITY OF ELECTRICITY PURCHASED 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.

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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.

### **CAPITAL EXPENDITURES FOR NEW AND USED PLANT AND EQUIPMENT**

Represents the total new and used capital expenditures reported by establishments in operation and any known plants under construction.

These data include expenditures for:

1. Permanent additions and major alterations to manufacturing and mining establishments.
2. New and used machinery and equipment used for replacement and additions to plant capacity, if they are of the type for which depreciation, depletion, or (for mining establishments) Office of Minerals Exploration accounts are ordinarily maintained. In addition, for mining establishments, these data include expenditures made during the year for development and exploration of mineral properties. For manufacturing establishments, these data are broken down into three types.
  - a. Automobiles, trucks, etc. for highway use. These include vehicles acquired under a lease-purchase agreement and excludes vehicles leased or normally designed to transport materials, property, or equipment on mining, construction, petroleum development, and similar projects. These vehicles are of such size or weight as to be normally restricted by state laws or regulations from operating on public highways. It also excludes purchases of vehicles that are purchased by a company for highway use.
  - b. Computers and peripheral data processing equipment. This item include all purchases of computers and related equipment.
  - c. All other expenditures for machinery and equipment excluding automobiles and computer equipment.

Capital expenditures include work done by contract, as well as by the establishment's own workforce.

These data exclude expenditures for land and mineral rights and cost of maintenance and repairs charged as current operating expenses.

### **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.



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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: Reported contract work — receipts for work or services that a plant performed for others on their materials. Value of resales — sales of products brought and sold without further manufacture, processing, or assembly. 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: Primary products value of shipments. Secondary product value of shipments. 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.

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Before 1962, cost of materials and value of shipments were not published for some industries that 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 ratio**

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 ratio have been developed to measure the relationship of primary product shipments to the data on shipments for the industry shown in Tables 1 through 5 and data on product shipments shown in Tables 6a and 6b.

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

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

# Appendix B.

## NAICS Codes, Titles, and Descriptions

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### **333120 CONSTRUCTION MACHINERY MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing construction machinery, surface mining machinery, and logging equipment.

# Appendix C.

## Methodology

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### SOURCES OF THE DATA

The manufacturing sector includes approximately 350,000 establishments. This number includes those industries in the North American Industry Classification System (NAICS) definition of manufacturing. The amount of information requested from manufacturing establishments was 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).

Establishments in the 2002 Economic Census are divided into those sent report forms and those not sent report forms. The coverage of and the method of obtaining census information from each are described below:

1. Establishments sent a report form:

- 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-10000) 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 473 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 certain 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

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for the respondent to describe significant materials not listed on the form.

A wide variety of special inquiries were 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 “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 “not specified by kind” (nsk) categories.

## 2. Establishments not sent a report form:

- a. 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 the Census Bureau’s ability to assign the correct six-digit NAICS industry classification to the establishment. For each six-digit NAICS 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 that 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 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 NAICS group classification codes available in the files. For manufacturing, these establishments were sent a

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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.

- b. All nonemployers, i.e., all firms subject to federal income tax, with no paid employees, during 2002 are excluded as in previous censuses. Data for nonemployers are not included in this report, but are released in the annual *Nonemployer Statistics* series.

The report forms used to collect information for establishments in this sector are available at [help.econ.census.gov/econhelp/resources/](http://help.econ.census.gov/econhelp/resources/).

A more detailed examination of census methodology is presented in the *History of the Economic Census* at [www.census.gov/econ/www/history.html](http://www.census.gov/econ/www/history.html).

## **INDUSTRY CLASSIFICATION OF ESTABLISHMENTS**

The classifications for all establishments covered in the 2002 Economic Census — Manufacturing are classified in 1 of 473 industries in accordance with the industry definitions in the *North American Industry Classification System (NAICS), United States, 2002* manual. There were no changes between the 2002 edition and the 1997 edition affecting this sector. When applicable, Appendix F 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 2002, 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). Product classes and products of the manufacturing industries have been assigned codes based on the industry from which they originate. There are 1,450 product classes (seven-digit codes), 5,674 census products, and an additional 3,746 ten-digit product codes. The ten-digit products are considered the primary products of the industry with the same first six digits.

For the 2002 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 2002, 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.

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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 that 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 2002 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 2002, 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 2002 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 ASM sample is drawn for the second survey year after a census. The most recent sample was drawn for the 1999 survey year based on the 1997 Economic Census — Manufacturing. This sample will be in place through the 2003 ASM.

In 1997, there were approximately 370,000 individual manufacturing establishments. For sample efficiency and cost considerations, the establishments in the 1997 manufacturing population were partitioned into two components for developing estimates within the ASM. The details of each are described below:

1. Mail stratum. The mail stratum of the survey is comprised of larger single-location manufacturing companies and all manufacturing establishments of multiunit companies (companies

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that operate at more than one physical location). Approximately 200,000 of the 370,000 establishments in the 1997 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 1999 survey, a new sample of approximately 58,000 individual establishments was selected from the mail stratum assembled from the 1997 census. Supplemental samples representing both 1998 and 1999 births (newly active establishments that were not included in the 1997 census) were also selected. Establishments selected for the sample are mailed an ASM survey questionnaire for each year through 2003.

The 1999-2003 ASM sample design is similar to the one used since 1984. Companies in the 1997 Economic Census — Manufacturing 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 1999-2003 sample, there are approximately 500 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. Across these 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 1997 Economic Census — Manufacturing.

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 1997 industry classification and its 1997 product class data. For each product class (1,755) and six-digit industry (473), 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 the Census Bureau's 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) that permits us to prevent small establishments from being selected in consecutive samples without introducing a bias into the survey estimates.

2. Nonmail stratum. The initial nonmail component of the survey was comprised of approximately 170,000 small, single-establishment companies that were tabulated as administrative records in the 1997 Economic Census — Manufacturing. 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.

## **RELIABILITY OF DATA**

All data compiled in the economic census are subject to nonsampling errors. Nonsampling errors can be attributed to many sources during the development or execution of the census. The following are two ways that further explain this method: ASM Estimating Procedure. Most of the ASM



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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 1997 (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 1998-2002 ASM estimates, the 1997 Economic Census — Manufacturing values serve as the base year. For the 2003 ASM, the base will be updated to be the 2002 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 contained approximately 170,000 individual establishments in 1999, 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. ASM Data Qualifications. 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.

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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.

#### **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 2002 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.

#### **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 in a specific industry or geographic area is not considered a disclosure; therefore, this information may be released even though other information is withheld. Techniques employed to limit disclosure are discussed at [www.census.gov/epcd/ec02/disclosure.htm](http://www.census.gov/epcd/ec02/disclosure.htm).

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. Nonetheless, the suppressed data are included in higher-level totals. A separate disclosure analysis is performed for capital expenditures, which can be suppressed even though value of shipments data are published.

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan Areas and Micropolitan Statistical Areas

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Not applicable for this report.

# Appendix F. Comparability of Product Classes and Product Codes: 2002 to 1997

2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published
3331111.....	3331111.....	3331111	3331319.....	3331319.....	3331319	3332103YVW.....	3332103YVW.....	3332103YVW
333111100.....	333111100.....	333111000	333131901.....	333131901.....	333131901	3332105.....	3332105.....	3332105
3331114.....	3331113 pt.....	3331113 pt	333131906.....	333131906.....	333131906	3332105311.....	3332105211.....	3332105211
3331114100 pt.....	3331113110.....	3331113000 pt	333131911.....	333131911.....	333131911	3332105351 pt.....	3332105251 pt.....	3332105101
3331114100 pt.....	3331113YVW.....	3331113000 pt	3331319216.....	3331319216.....	3331319216	3332105351 pt.....	3332105251 pt.....	3332105221
3331117.....	3331117.....	3331117	3331319321.....	3331319321.....	3331319321	3332105351 pt.....	3332105251 pt.....	3332105231
3331117100.....	3331117100.....	3331117000	3331319426.....	3331319426.....	3331319426	3332105351 pt.....	3332105251 pt.....	3332105241
3331119.....	3331119.....	3331119	3331319531.....	3331319531.....	3331319531	3332105351 pt.....	3332105251 pt.....	3332105251
3331119100.....	3331119100.....	3331119000	3331319636.....	3331319636.....	3331319636	3332105351 pt.....	3332105YVW.....	3332105YVW
3331119100.....	3331119100.....	3331119000	3331319744.....	3331319744.....	3331319744	3332105YVW.....	3332105YVW.....	3332105YVW
3331119100.....	3331119100.....	3331119000	3331319YVW.....	3331319YVW.....	3331319YVW	333210W.....	333210W.....	333210W
333111A.....	333111A.....	333111A	333131W.....	333131W.....	333131W	333210WYVW.....	333210WYVW.....	333210WYVW
333111A100.....	333111A100.....	333111A000	333131WYVW.....	333131WYVW.....	333131WYVW	333210WYVW.....	333210WYVW.....	333210WYVW
333111A100.....	333111A100.....	333111A000	333131WYVW.....	333131WYVW.....	333131WYVW	3332201.....	3332201.....	3332201
333111C.....	333111C.....	333111C	3331321.....	3331321.....	3331321	3332201106.....	3332201106.....	3332201106
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3333155221	3333155221	3333155221	3334120573	3334120573	3334120573	333415C100	333415C100	333415C000
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			3334141106	3334141106	3334141106	333415D151	333415D151	333415D151
333315W	333315W	333315W	3334141111	3334141111	3334141111	333415D161	333415D161	333415D161
333315WYVW	333315WYVW	333315WYVW	3334141116	3334141116	3334141116	333415D171	333415D171	333415D171
333315WYVY	333315WYVY	333315WYVY	3334141YVW	3334141YVW	3334141YVW	333415D181	333415D181	333415D181
						333415DYVW	333415DYVW	333415DYVW
3333191	3333191	3333191	3334143	3334143	3334143			
3333191111	3333191111	3333191111	3334143101	3334143101	3334143101	333415E	333415E	333415E
3333191116	3333191116	3333191116	3334143106	3334143106	3334143106	333415E100	333415E100	333415E000
3333191121	3333191121	3333191121	3334143111	3334143111	3334143111			
3333191131	3333191131	3333191131	3334143116	3334143116	3334143116	333415F	333415F	333415F
3333191241	3333191241	3333191241	3334143121	3334143121	3334143121	333415F100	333415F100	333415F000
3333191251	3333191251	3333191251	3334143126	3334143126	3334143126			
3333191261	3333191261	3333191261	3334143131	3334143131	3334143131	333415G	333415G	333415G
3333191271	3333191271	3333191271	3334143136	3334143136	3334143136	333415G100	333415G100	333415G000
3333191281	3333191281	3333191281	3334143141	3334143141	3334143141			
3333191391	3333191391	3333191391	3334143146	3334143146	3334143146	333415W pt.	332322W pt.	332322W pt.
3333191YVW	3333191YVW	3333191YVW	3334143151	3334143151	3334143151			
			3334143YVW	3334143YVW	3334143YVW	333415W pt.	333414W pt.	333414W pt.
3333193	3333193	3333193						
3333193101	3333193101	3333193101	3334145	3334145	3334145	333415W pt.	333415W	333415W
3333193111	3333193111	3333193111	3334145101	3334145101	3334145101	332322WYVW pt.	332322WYVW pt.	332322WYVW pt.
3333193221	3333193221	3333193221	3334145111	3334145111	3334145111	333415WYVW pt.	333414WYVW pt.	333414WYVW pt.
3333193YVW	3333193YVW	3333193YVW	3334145YVW	3334145YVW	3334145YVW	333415WYVW pt.	333415WYVW	333415WYVW
						333415WYVY pt.	332322WYVY pt.	332322WYVY pt.
3333195	3333195	3333195	3334147	3334147	3334147	333415WYVY pt.	333414WYVY pt.	333414WYVY pt.
3333195101	3333195101	3333195101	3334147101	3334147101	3334147101	333415WYVY pt.	333414WYVY pt.	333414WYVY pt.
3333195106	3333195106	3333195106	3334147106	3334147106	3334147106	333415WYVY pt.	333414WYVY pt.	333414WYVY pt.
3333195111	3333195111	3333195111	3334147111	3334147111	3334147111			
3333195116	3333195116	3333195116	3334147116	3334147116	3334147116	3335110	3335110	3335110
3333195121	3333195121	3333195121	3334147121	3334147121	3334147121	3335110101	3335110101	3335110101
3333195126	3333195126	3333195126	3334147126	3334147126	3334147126	3335110106	3335110106	3335110106
3333195231	3333195231	3333195231	3334147YVW	3334147YVW	3334147YVW	3335110411	3335110211	3335110211
3333195YVW	3333195YVW	3333195YVW				3335110416	3335110216	3335110216
			333414A pt.	333414A pt.	333414A pt.	3335110421	3335110221	3335110221
3333197	3333197	3333197	333414A101	3334149101	3334149101	3335110426	3335110226	3335110226
3333197100	3333197100	3333197000	333414A106	3334149106	3334149106	3335110431	3335110231	3335110231
333319A pt.	3333199	3333199	333414A111	3334149111	3334149111	3335110436	3335110236	3335110236
333319A pt.	339999K pt.	339999H pt.	333414A116	3334149116	3334149116	3335110441	3335110241	3335110241
333319A101	3333199101	3333199101	333414A121	3334149121	3334149121	3335110446	3335110246	3335110246
333319A106	3333199106	3333199106	333414A126	3334149126	3334149126			
333319A111	3333199111	3333199111	333414A131	3334149131	3334149131	3335110451	3335110251	3335110251
333319A116	3333199116	3333199116	333414A136	3334149136	3334149136	3335110476	3335110276	3335110276
333319A146	3333199146	3333199146	333414A138	3333999893	3339999895 pt.	3335110481	3335110281	3335110281
333319A151	3333199151	3333199151	333414A140	3334149140	3334149140	3335110486	3335110286	3335110286
333319A161	3333199161	3333199161	333414A150	3334149150	3334149150	3335110556	3335110356	3335110356
333319A166	3333199166	3333199166	333414A151	3334149151	3334149151	3335110558	3335110261	3335110261
333319A171	3333199171	3333199171	333414AYVW pt.	3334149YVW pt.	3334149YVW pt.	3335110560	3335110266	3335110266
333319A174	3333199174	3333199174	333414AYVW pt.	3339998YVW pt.	3339998YVW pt.	3335110YVW	3335110YVW	3335110YVW
						3335110YVY	3335110YVY	3335110YVY
333319A178	3333199178	3333199178	333414W pt.	333414W pt.	333414W pt.			
333319A182	3333199182	3333199182	333414W pt.	333999W pt.	333999W pt.	3335121	3335121	3335121
333319A186	3333199186	3333199186	333414WYVW pt.	333414WYVW pt.	333414WYVW pt.	3335121200 pt.	3335121100 pt.	3335121100
333319A189	3333199189	3333199189	333414WYVW pt.	333999WYVW pt.	333999WYVW pt.	3335121200 pt.	333512100 pt.	3335121YVW
333319A191	339999K106	339999H106	333414WYVY pt.	333414WYVY pt.	333414WYVY pt.	3335122	3335122	3335122
333319A194	3333199194	3333199194	333414WYVY pt.	333414WYVY pt.	333414WYVY pt.	3335122100	3335122100	3335122000
333319A196	3333199196	3333199196	333414WYVY pt.	333999WYVY pt.	333999WYVY pt.			
333319A221	3333199221	3333199221				3335123	3335123	3335123
333319A236	3333199236	3333199236	3334152 pt.	3219990 pt.	3219990 pt.	3335123100	3335123100	3335123000
333319A256	3333199256	3333199256						
333319A299	3333199299	3333199299	3334152 pt.	332322E pt.	332322E pt.	3335124	3335124	3335124
333319A301	3333199301	3333199301	3334152 pt.	3334149 pt.	3334149 pt.	3335124100	3335124100	3335124000
333319A326	3333199326	3333199326						
333319A331	3333199331	3333199331	3334152100 pt.	3219990185	3219990191 pt.	3335125	3335125	3335125
333319A341	3333199341	3333199341	3334152100 pt.	3219990YVW pt.	3219990YVW pt.	3335125101	3335125101	3335125101
333319AYVW pt.	3333199YVW	3333199YVW	3334152100 pt.	3219990WYVW pt.	3219990WYVW pt.	3335125106	3335125106	3335125106
333319AYVW pt.	339999KYVW pt.	339999HYVW pt.	3334152100 pt.	332322E109	332322E106 pt.	3335125116	3335125116	3335125116
			3334152100 pt.	332322EYVW pt.	332322EYVW pt.	3335125198 pt.	3335125199 pt.	3335125111
333319W pt.	333319W	333319W	3334152100 pt.	3334149153	3334149YVW pt.	3335125198 pt.	3335125199 pt.	3335125199
333319W pt.	339999W pt.	339999W pt.	3334152100 pt.	3334149YVW pt.	3334149YVW pt.	3335125YVW	3335125YVW	3335125YVW
333319WYVW pt.	333319WYVW	333319WYVW	3334152100 pt.	3334151100	3334151000			
333319WYVW pt.	339999WYVW pt.	339999WYVW pt.				3335126	3335126	3335126
333319WYVY pt.	333319WYVY	333319WYVY	3334153	3334153	3334153	3335126101	3335126101	3335126101
333319WYVY pt.	339999WYVY pt.	339999WYVY pt.	3334153101	3334153101	3334153101	3335126107	3335126107	3335126106 pt.
			3334153106	3334153106	3334153106	3335126111	3335126111	3335126106 pt.
3334111	3334111	3334111	3334153111	3334153111	3334153111	3335126YVW	3335126YVW	3335126YVW
3334111110	3334111110	3334111110	3334153116	3334153116	3334153116			
3334111165	3334111165	3334111165	3334153121	3334153121	3334153121	3335127	3335127	3335127
3334111YVW	3334111YVW	3334111YVW	3334153126	3334153126	3334153126	3335127100	3335127100	3335127000
			3334153131	3334153131	3334153131			
3334113	3334113	3334113	3334153136	3334153136	3334153136	3335128	3335128	3335128
3334113103	3334113103	3334113103	3334153141	3334153141	3334153141	3335128100	3335128100	3335128000
3334113207	3334113207	3334113207	3334153146	3334153146	3334153146			
3334113211	3334113211	3334113211	3334153151	3334153151	3334153151	3335129	3335129	3335129
3334113231	3334113231	3334113231	3334153156	3334153156	3334153156	3335129100	3335129100	3335129000
3334113355	3334113355	3334113355	3334153191	3334153191	3334153191	333512A	333512A	333512A
3334113YVW	3334113YVW	3334113YVW	3334153YVW	3334153YVW	3334153YVW	333512A100 pt.	333512A100 pt.	333512A100
						333		

2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published
3335137	3335137	3335137	3335163	3335163	3335163	3336133444	3336133444	3336133444
3335137101	3335137101	3335137101	3335163101	3335163101	3335163101	3336133545	3336133545	3336133545
3335137111	3335137111	3335137111	3335163106	3335163106	3335163106	3336133648	3336133648	3336133648
3335137117	3335137117	3335137116 pt	3335163191	3335163191	3335163191	3336133649	3336133649	3336133649
3335137121	3335137121	3335137116 pt	3335163YVW	3335163YVW	3335163YVW	3336133756	3336133756	3336133756
3335137YVW	3335137YVW	3335137YVW	3335165	3335165	3335165	3336133763	3336133763	3336133763
333513W	333513W	333513W	3335165101	3335165101	3335165101	3336133767	3336133767	3336133767
333513WYVW	333513WYVW	333513WYVW	3335165106	3335165106	3335165106	3336133788	3336133788	3336133788
333513WYVY	333513WYVY	333513WYVY	3335165111	3335165111	3335165111	3336133792	3336133792	3336133792
3335140	3335140	3335140	3335165116	3335165116	3335165116	3336133798	3336133798	3336133798
3335140101	3335140101	3335140101	3335165121	3335165121	3335165121	3336133YVW	3336133YVW	3336133YVW
3335140103	3335140103	3335140103	3335165YVW	3335165YVW	3335165YVW	333613W	333613W	333613W
3335140106	3335140106	3335140106	333516W	333516W	333516W	333613WYVW	333613WYVW	333613WYVW
3335140109	3335140109	3335140109	333516WYVW	333516WYVW	333516WYVW	333613WYVY	333613WYVY	333613WYVY
3335140112	3335140112	3335140112	333516WYVY	333516WYVY	333516WYVY	3336181	3336181	3336181
3335140215	3335140215	3335140215	3335181	3335181	3335181	3336181100	3336181100	3336181100
3335140318	3335140318	3335140318	3335181101	3335181101	3335181101	3336183	3336183	3336183
3335140321	3335140321	3335140321	3335181206	3335181206	3335181206	3336183100	3336183100	3336183000
3335140326	3335140326	3335140326	3335181311	3335181311	3335181311	3336185	3336185	3336185
3335140332	3335140332	3335140332	3335181416	3335181416	3335181416	3336185100	3336185100	3336185000
3335140423	3335140423	3335140423	3335181521	3335181521	3335181521	3336189	3336189	3336189
3335140429	3335140429	3335140429	3335181YVW	3335181YVW	3335181YVW	3336189100	3336189100	3336189000
3335140535	3335140535	3335140535	3335183	3335183	3335183	333618B pt	333618B pt	3336187
3335140538	3335140538	3335140538	3335183101	3335183101	3335183101	333618B pt	333618B pt	333618A
3335140541	3335140541	3335140541	3335183106	3335183106	3335183106	333618B pt	333618B pt	333618W pt
3335140543	3335140543	3335140543	3335183111	3335183111	3335183111	333618B101	333618B101	333618A101
3335140546	3335140546	3335140546	3335183116	3335183116	3335183116	333618B106	333618B106	333618A106
3335140549	3335140549	3335140549	3335183121	3335183121	3335183121	333618B108	333618B108	3336187100
3335140652	3335140652	3335140652	3335183126	3335183126	3335183126	333618B110	333618B110	333618WYVY pt
3335140655	3335140655	3335140655	3335183131	3335183131	3335183131	333618BYVW	333618BYVW	333618A
3335140658	3335140658	3335140658	3335183YVW	3335183YVW	3335183YVW	333618F	333618F	333618F
3335140661	3335140661	3335140661	333518W	333518W	333518W	333618F101	333618F101	333618F101
3335140663	3335140663	3335140663	333518WYVW	333518WYVW	333518WYVW	333618F106	333618F106	333618F106
3335140666	3335140666	3335140666	333518WYVY	333518WYVY	333518WYVY	333618F111	333618F111	333618F111
3335140769	3335140769	3335140769	3336110	3336110	3336110	333618F116	333618F116	333618F116
3335140772	3335140772	3335140772	3336110101	3336110101	3336110101	333618F121	333618F121	333618F121
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3335140878	3335140878	3335140878	3336110741	3336110741	3336110741	333618F131	333618F131	333618F131
3335140981	3335140981	3335140981	3336110746	3336110746	3336110746	333618F136	333618F136	333618F136
3335140YVW	3335140YVW	3335140YVW	3336110761	3336110761	3336110761	333618F141	333618F141	333618F141
3335140YVY	3335140YVY	3335140YVY	3336110766	3336110766	3336110766	333618F146	333618F146	333618F146
3335151	3335151	3335151	3336110776 pt	3336110776 pt	3336110776 pt	333618F151	333618F151	333618F151
3335151102	3335151102	3335151102	3336110776 pt	3336110776 pt	3336110776 pt	333618F156	333618F156	333618F156
3335151124	3335151124	3335151124	3336110836	3336110836	3336110836	333618F161	333618F161	333618F161
3335151126	3335151126	3335151126	3336110856	3336110856	3336110856	333618F166	333618F166	333618F166
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3335151148	3335151148	3335151148	3336110YVW	3336110YVW	3336110YVW	333618F186	333618F186	333618F186
3335151152	3335151152	3335151152	3336110YVY	3336110YVY	3336110YVY	333618F196	333618F196	333618F196
3335151188	3335151188	3335151188	33361123	33361123	33361123	333618F199	333618F199	333618F199
3335151204	3335151204	3335151204	3336112311	3336112311	3336112311	333618F281	333618F281	333618F281
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3335151308	3335151308	3335151308	3336112313	3336112313	3336112313	333618W	333618W	333618W pt
3335151312	3335151312	3335151312	3336112316	3336112316	3336112316	333618WYVW	333618WYVW	333618WYVW pt
3335151314	3335151314	3335151314	3336112325	3336112325	3336112325	3339111	3339111	3339111
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3335151438	3335151438	3335151438	3336127114	3336127114	3336127114	3339111YVW	3339111YVW	3339111YVW
3335151442	3335151442	3335151442	3336127116	3336127116	3336127116	3339115	3339115	3339115
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3335151554	3335151554	3335151554	3336127225	3336127225	3336127225	3339115YVW	3339115YVW	3339115YVW
3335151558	3335151558	3335151558	3336127226	3336127226	3336127226	333911W	333911W	333911W
3335151562	3335151562	3335151562	3336127229	3336127229	3336127229	333911WYVW	333911WYVW	333911WYVW
3335151564	3335151564	3335151564	3336127327	3336127327	3336127327	333911WYVY	333911WYVY	333911WYVY
3335151568	3335151568	3335151568	3336127437	3336127437	3336127437	3339121	3339121	3339121
3335151572	3335151572	3335151572	3336127438	3336127438	3336127438	3339121110	3339121110	3339121110
3335151574	3335151574	3335151574	3336127441	3336127441	3336127441	3339121220	3339121220	3339121220
3335151576	3335151576	3335151576	3336127443	3336127443	3336127443	3339121YVW	3339121YVW	3339121YVW
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3335151586	3335151586	3335151586	333612744R	333612744R	333612744R	3339127131	3339127131	3339127131
3335151592	3335151592	3335151592	3336127553	3336127553	3336127553	3339127151	3339127151	3339127151
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3335151656	3335151656	3335151656	3336127559	3336127559	3336127559	3339127YVW	3339127YVW	3339127YVW
3335151766	3335151766	3335151766	3336127666	3336127666	3336127666	333912W	333912W	333912W
3335151YVW	3335151YVW	3335151YVW	3336127771	3336127771	3336127771	333912WYVW	333912WYVW	333912WYVW
3335153	3335153	3335153	3336127773	3336127773	3336127773	333912WYVY	333912WYVY	333912WYVY
3335153101	3335153101	3335153101	3336127776	3336127776	3336127776	3339130	333913	





2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published
3339953	3339953	3339953	3339971215	3339971215	3339971215	3339996100	3339996100	3339996000
3339953100	3339953100	3339953100	3339971313	3339971313	3339971313	3339997 pt	3329995 pt	3329994 pt
3339955	3339955	3339955	3339971YVW	3339971YVW	3339971YVW	3339997 pt	3329995 pt	3329994 pt
3339955100	3339955100	3339955100	3339973	3339973	3339973	3339997 pt	3329995 pt	3329994 pt
3339957	3339957	3339957	3339973102 pt	3339973102 pt	3339973101	3339997109	3339998109	3339998109
3339957100	3339957100	3339957100	3339973102 pt	3339973102 pt	3339973103	3339997218	3339998218	3339998218
333995W	333995W	333995W	3339973105	3339973105	3339973105	3339997321	3339998321	3339998321
333995WYWW	333995WYWW	333995WYWW	3339973107	3339973107	3339973107	3339997425	3339998425	3339998425
333995WYWY	333995WYWY	333995WYWY	3339973109	3339973109	3339973109	3339997436	3339998436	3339998436
3339961	3339961	3339961	3339973YVW	3339973YVW	3339973YVW	3339997446	3339998446	3339998446
3339961100	3339961100	3339961100	3339975	3339975	3339975	3339997451	3339998451	3339998451
3339963	3339963	3339963	3339975101	3339975101	3339975101	3339997556	3339998556	3339998556
3339963100	3339963100	3339963100	3339975103	3339975103	3339975103	3339997661	3339998661	3339998661
3339965	3339965	3339965	3339975105	3339975105	3339975105	3339997763	3339998763	3339998763
3339965100	3339965100	3339965100	3339975107	3339975107	3339975107	3339997870	3339998870	3339998870
3339967	3339967	3339967	3339975YVW	3339975YVW	3339975YVW	3339997880	3339998880	3339998880
3339967100	3339967100	3339967100	333997W	333997W	333997W	3339997983	3339998983	3339998983
3339969	3339969	3339969	333997WYWW	333997WYWW	333997WYWW	3339997986	3339998986	3339998986
3339969100	3339969100	3339969100	333997WYWY	333997WYWY	333997WYWY	3339997989	3339998989	3339998989
333996W	333996W	333996W	3339991	3339991	3339991	3339997994	3339998994	3339998994
333996WYWW	333996WYWW	333996WYWW	3339991104	3339991104	3339991104	3339997997	3329995121	3329994121
333996WYWY	333996WYWY	333996WYWY	3339991108	3339991108	3339991108	3339997998	3339998996	3339998996
3339971	3339971	3339971	3339991111	3339991111	3339991111	3339997YVW pt	3329995YVW pt	3329994YVW pt
3339971101	3339971101	3339971101	3339991212	3339991212	3339991212	3339997YVW pt	3329995YVW pt	3329994YVW pt
3339971103	3339971103	3339971103	3339991389	3339991389	3339991389	3339999A	3339999 pt	3339999 pt
3339971205	3339971205	3339971205	3339991YVW	3339991YVW	3339991YVW	3339999A100	3339999110	3339999100 pt
3339971207	3339971207	3339971207	3339993	3339993	3339993	3339999W pt	3329999W pt	3329999W pt
3339971209	3339971209	3339971209	3339993100	3339993100	3339993000	3339999W pt	3329999W pt	3329999W pt
3339971211	3339971211	3339971211	3339994	3339994	3339994	3339999W pt	3329999W pt	3329999W pt
			3339994100	3339994100	3339994000	3339999WYWW pt	3329999WYWW pt	3329999WYWW pt
			3339996	3339996	3339996	3339999WYWW pt	3329999WYWW pt	3329999WYWW pt
						3339999WYWY pt	3329999WYWY pt	3329999WYWY pt
						3339999WYWY pt	3329999WYWY pt	3329999WYWY pt

