

# Bolt, Nut, Screw, Rivet, and Washer Manufacturing: 2002

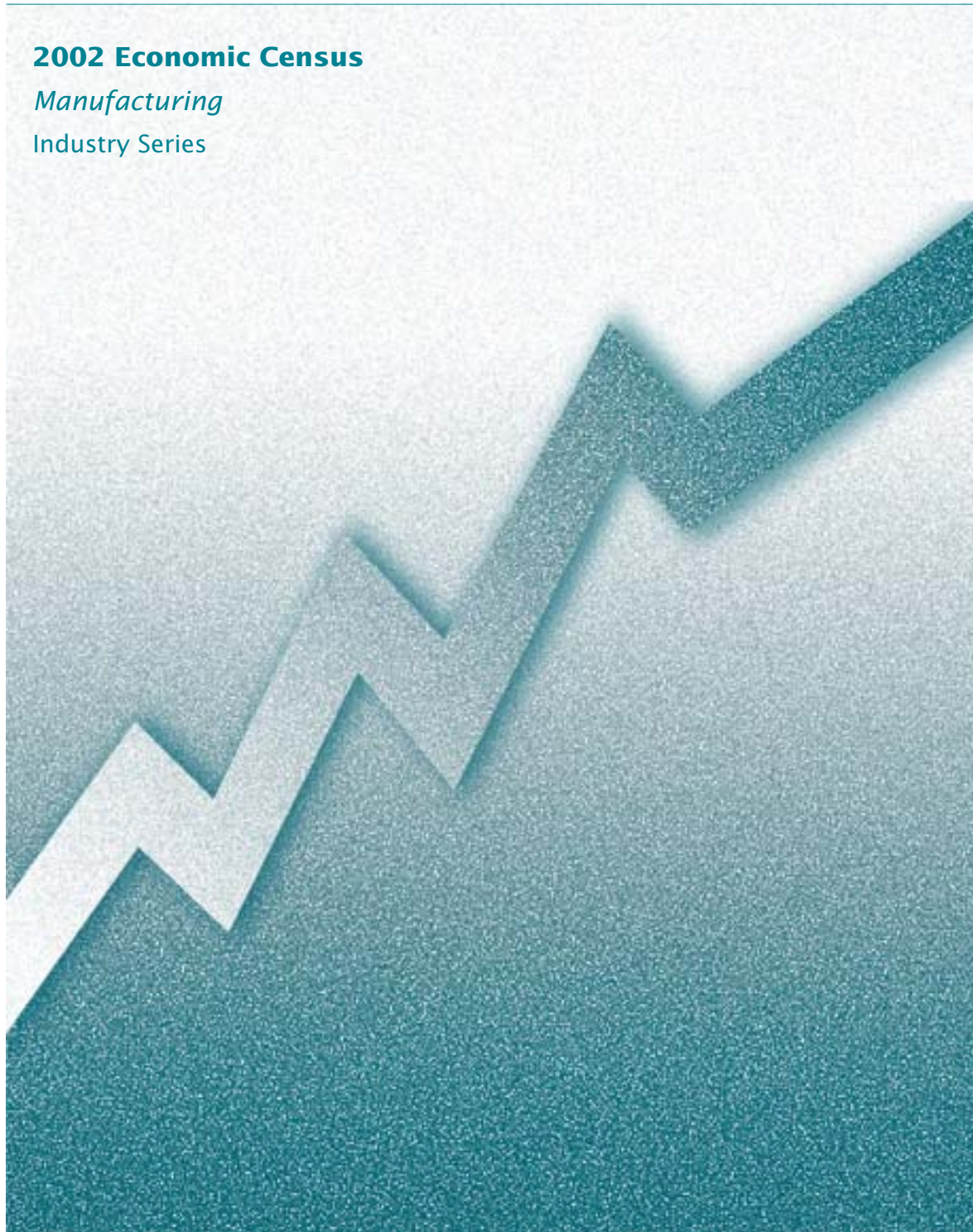
Issued January 2005

EC02-311-332722 (RV)

## 2002 Economic Census

*Manufacturing*

Industry Series



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

*Helping You Make Informed Decisions*

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



## ACKNOWLEDGMENTS

This report was prepared in the Manufacturing and Construction Division under the direction of **Judy M. Dodds**, Assistant Division Chief for Census and Related Programs who was responsible for the overall planning, management, and coordination. **Nathaniel Shelton**, Chief, Primary Goods Industries Branch, assisted by **Nancy Higgins**, **Walter Hunter**, and **Joanna Nguyen**, Section Chiefs, and **Raphael Corrado**, **Tom Flood**, **Robert Miller**, and **Robert Rosati**, Special Assistants, performed the planning and implementation. **Timothy Althouse**, **Luis Blanco**, **Brenda Campbell**, **Theresa Crowley**, **Daphne Kelly**, **Mai Ngan Le**, **John Linehan**, **Madelyn Nieves**, **Bridgett Parker-Bell**, **Dorothy Parsons**, **Gloria Peebles-Butler**, **Myss Sykes-Stephens**, **Athanasios Theodoropoulos**, **Denneth Wallace**, and **Ernest Wilson Jr.**, provided primary staff assistance. **Mendel D. Gayle**, Chief, Census and Related Programs Support Branch, assisted by **Kimberly DePhillip**, Section Chief, performed overall coordination of the publication process. **Patrick Duck**, **Michael Flaherty**, **Taylor C. Murph**, **Wanda Sledd**, and **Veronica White** provided primary staff assistance.

Mathematical and statistical techniques, as well as the coverage operations, were provided by **Paul Hsen**, Assistant Division Chief for Research and Methodology Programs, assisted by **Stacey Cole**, Chief, Manufacturing Methodology Branch, and **Robert Struble**, Section Chief. **Jeffrey Dalzell** and **Cathy Gregor** provided primary staff assistance.

**Eddie J. Salyers**, Assistant Division Chief of Economic Planning and Coordination Division, was responsible for overseeing the editing and tabulation procedures and the interactive analytical software. **Dennis Shoemaker** and **Kim Wortman**, Special Assistants, **John D. Ward**, Chief, Analytical Branch, and **Brandy L. Yarbrough**, Chief, Edit Branch, were responsible for developing the systems and procedures for data collection, editing, review, and correction. **Donna L. Hambric**, Chief of the Economic Planning Staff, was responsible for overseeing the systems and information for dissemination. **Douglas J. Miller**, Chief, Tables and Dissemination Branch, assisted by **Lisa Aispuro**, **Jamie Fleming**, **Keith Fuller**, **Andrew W. Hait**, and **Kathy G. Padgett** were responsible for developing the data dissemination systems and procedures.

The Geography Division staff, **Robert LaMacchia**, Chief, developed geographic coding procedures and associated computer programs.

The Economic Statistical Methods and Programming Division, **Howard R. Hogan**, Chief, developed and coordinated the computer processing systems. **Barry F. Sessamen**, Assistant Division Chief for Post Collection, was responsible for design and implementation of the processing system and computer programs. **Gary T. Sheridan**, Chief, Macro Analytical Branch, assisted by **Apparao V. Katikineni** and **Edward F. Johnson** provided computer programming and implementation.

The Systems Support Division provided the table composition system. **Robert Joseph Brown**, Table Image Processing System (TIPS) Senior Software Engineer, was responsible for the design and development of the TIPS, under the supervision of **Robert J. Bateman**, Assistant Division Chief, Information Systems.

The staff of the National Processing Center performed mailout preparation and receipt operations, clerical and analytical review activities, and data entry.

**Margaret A. Smith**, **Bernadette J. Beasley**, **Michael T. Browne**, and **Alan R. Plisch** of the Administrative and Customer Services Division, **Walter C. Odom**, Chief, provided publication and printing management, graphics design and composition, and editorial review for print and electronic media. General direction and production management were provided by **James R. Clark**, Assistant Division Chief, and **Susan L. Rappa**, Chief, Publications Services Branch.

Special acknowledgment is also due the many businesses whose cooperation contributed to the publication of these data.

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-- Not applicable for this report.

# Introduction to the Economic Census

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

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

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

- Policymaking agencies of the federal government use the data to monitor economic activity and 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)				
332722, Bolt, nut, screw, rivet, and washer manufacturing .....	835	964	44 761	1 794 941	33 332	69 335	1 155 310	4 451 998	3 329 812	7 782 829	307 194
2002..	N	N	51 834	1 975 217	39 428	81 463	1 287 688	4 585 213	3 381 934	8 070 010	271 038
2001..	N	N	53 504	2 122 215	40 550	85 601	1 389 560	5 013 204	3 694 554	8 720 384	397 304
2000..	N	N	55 336	2 087 157	41 878	88 487	1 368 550	4 979 966	3 663 284	8 654 807	374 747
1999..	N	N	56 334	2 046 182	42 434	89 197	1 331 084	5 088 138	3 748 493	8 766 232	351 610
1998..	N	N	53 342	1 952 584	39 874	84 970	1 236 422	4 711 843	3 523 376	8 208 031	396 430
1997..	913	1 041									

<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	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)
		Total	With 20 employees or more	Number <sup>3</sup>	Payroll (\$1,000)	Number <sup>3</sup>	Hours (1,000)	Wages (\$1,000)				
<b>332722, Bolt, nut, screw, rivet, and washer manufacturing</b>												
United States .....	2	964	456	44 761	1 794 941	33 332	69 335	1 155 310	4 451 998	3 329 812	7 782 829	'307 194
Alabama .....	-	12	9	685	26 104	402	830	10 677	83 136	98 652	178 557	'12 948
Arizona .....	2	8	3	272	12 806	215	496	8 737	30 558	14 004	44 974	'669
Arkansas .....	-	7	2	167	5 132	102	222	2 971	12 111	10 209	22 627	'211
California .....	3	133	55	7 186	317 968	5 074	10 846	186 616	744 517	329 371	1 067 305	'24 957
Colorado .....	-	7	3	307	12 126	213	431	6 475	27 640	18 564	46 072	'2 015
Connecticut .....	-	40	16	1 049	43 396	712	1 450	23 710	94 266	36 899	129 773	'5 779
Florida .....	7	18	4	531	18 702	394	863	11 364	37 054	22 586	60 478	'1 416
Georgia .....	4	8	4	204	9 151	133	264	4 747	22 512	11 146	33 669	'691
Illinois .....	2	126	71	7 362	303 725	5 432	11 555	198 419	741 854	575 071	1 315 759	'74 318
Indiana .....	-	30	17	1 826	67 488	1 474	2 916	48 066	184 493	183 991	378 751	'14 383
Iowa .....	-	5	4	632	19 179	581	1 207	16 230	59 644	31 604	93 105	'1 170
Kentucky .....	-	12	10	716	22 860	531	1 088	15 004	86 416	77 890	163 651	'9 924
Massachusetts .....	-	30	12	978	40 211	687	1 345	22 343	90 930	78 031	171 588	'3 694
Michigan .....	3	100	58	4 636	195 912	3 409	7 317	130 843	639 596	646 129	1 277 859	'35 053
Minnesota .....	4	12	5	430	16 137	318	515	9 815	37 984	17 666	55 711	'1 746
Missouri .....	4	15	8	362	13 346	269	540	8 605	33 188	18 472	51 621	'1 111
New Hampshire .....	-	7	5	200	7 490	138	296	4 411	13 689	6 798	20 768	'1 213
New Jersey .....	4	28	11	1 103	37 261	871	1 764	25 139	85 831	66 619	154 622	'4 781
New York .....	2	47	13	1 060	41 770	695	1 337	21 839	109 630	75 032	180 212	'3 270
North Carolina .....	1	8	3	526	16 542	432	911	12 421	23 148	33 660	59 599	'381
Ohio .....	2	84	47	4 205	170 337	3 142	6 739	110 146	337 911	324 984	659 854	'58 434
Oklahoma .....	9	5	3	313	15 509	253	576	11 439	32 141	24 154	54 608	'2 227
Oregon .....	4	10	3	138	5 428	109	219	4 018	11 195	8 336	20 203	'428
Pennsylvania .....	2	50	20	3 391	145 241	2 737	5 596	107 334	329 445	159 998	503 085	'10 657
Rhode Island .....	1	14	7	383	12 962	259	526	7 335	26 375	12 132	39 044	'1 719
South Carolina .....	1	9	3	206	7 017	167	372	4 841	32 419	17 065	48 040	'734
Tennessee .....	-	20	10	1 166	40 440	929	1 735	26 492	97 192	87 843	185 958	'5 331
Texas .....	1	43	17	1 652	60 846	1 268	2 661	41 856	137 982	100 706	237 483	'8 875
Virginia .....	1	6	5	683	20 369	541	1 183	14 552	55 617	51 588	106 106	'2 648
Wisconsin .....	1	31	14	1 266	44 978	1 020	1 889	31 655	139 067	133 731	268 735	'8 774

<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>332722, Bolt, nut, screw, rivet, and washer manufacturing</b>	
Companies <sup>1</sup> .....	number.. 835
All establishments <sup>2</sup> .....	number.. 964
Establishments with 1 to 19 employees .....	number.. 508
Establishments with 20 to 99 employees .....	number.. 328
Establishments with 100 employees or more .....	number.. 128
All employees <sup>3</sup> .....	number.. 44 761
Total compensation .....	\$1,000.. 2 267 783
Annual payroll .....	\$1,000.. 1 794 941
Total fringe benefits .....	\$1,000.. 472 842
Production workers, average for year .....	number.. 33 332
Production workers on March 12 .....	number.. 33 312
Production workers on May 12 .....	number.. 33 431
Production workers on August 12 .....	number.. 33 334
Production workers on November 12 .....	number.. 33 153
Production worker hours .....	..1,000.. 69 335
Production worker wages .....	\$1,000.. 1 155 310
Total cost of materials .....	\$1,000.. 3 329 812
Materials, parts, containers, packaging, etc., used .....	\$1,000.. 2 397 266
Resales .....	\$1,000.. 290 119
Purchased fuels .....	\$1,000.. 32 780
Purchased electricity .....	\$1,000.. 90 649
Contract work .....	\$1,000.. 518 998
Quantity of electricity purchased for heat and power .....	1,000 kWh.. 1 309 236
Quantity of electricity generated less sold for heat and power .....	1,000 kWh.. D
Total value of shipments .....	\$1,000.. 7 782 829
Primary products value of shipments .....	\$1,000.. 7 000 723
Secondary products value of shipments .....	\$1,000.. 354 915
Total miscellaneous receipts .....	\$1,000.. 427 191
Value of resales .....	\$1,000.. 387 778
Contract receipts .....	\$1,000.. 20 323
Other miscellaneous receipts .....	\$1,000.. 19 090
Primary products specialization ratio .....	percent.. 95
Value of primary products shipments made in all industries .....	\$1,000.. 7 172 324
Value of primary products shipments made in this industry .....	\$1,000.. 7 000 723
Value of primary products shipments made in other industries .....	\$1,000.. 171 601
Coverage ratio .....	percent.. 98
Value added .....	\$1,000.. 4 451 998
Total inventories, beginning of year .....	\$1,000.. 1 162 462
Finished goods inventories .....	\$1,000.. 603 605
Work-in-process inventories .....	\$1,000.. 297 317
Materials and supplies inventories .....	\$1,000.. 262 578
Total inventories, end of year .....	\$1,000.. 1 169 573
Finished goods inventories .....	\$1,000.. 614 597
Work-in-process inventories .....	\$1,000.. 285 306
Materials and supplies inventories .....	\$1,000.. 270 903
Gross value of depreciable assets (acquisition costs) at beginning of year .....	\$1,000.. '4 044 794
Total capital expenditures (new and used) .....	\$1,000.. '307 194
Buildings and other structures (new and used) .....	\$1,000.. '51 611
Machinery and equipment (new and used) .....	\$1,000.. '255 583
Automobiles, trucks, etc., for highway use .....	\$1,000.. '7 792
Computers and peripheral data processing equipment .....	\$1,000.. '22 409
All other expenditures for machinery and equipment .....	\$1,000.. '225 382
Total retirements .....	\$1,000.. '208 974
Gross value of depreciable assets at end of year .....	\$1,000.. '4 143 014
Depreciation charges during year .....	\$1,000.. '255 113
Total rental payments .....	\$1,000.. 103 979
Buildings and other structures .....	\$1,000.. 66 624
Machinery and equipment .....	\$1,000.. 37 355
Total other expenses <sup>4</sup> .....	\$1,000.. 520 938
Response coverage ratio <sup>5</sup> .....	percent.. 80
Repair and maintenance services of buildings and/or machinery <sup>4</sup> .....	\$1,000.. 68 290
Communications services <sup>4</sup> .....	\$1,000.. 20 253
Legal services <sup>4</sup> .....	\$1,000.. 8 770
Accounting, auditing, and bookkeeping services <sup>4</sup> .....	\$1,000.. 10 538
Advertising and promotional services <sup>4</sup> .....	\$1,000.. 12 378
Expensed computer hardware and supplies and purchased computer services <sup>4</sup> .....	\$1,000.. 12 756
Refuse removal (including hazardous waste) services <sup>4</sup> .....	\$1,000.. 8 959
Management consulting and administrative services <sup>4</sup> .....	\$1,000.. 15 206
Taxes and license fees <sup>4</sup> .....	\$1,000.. 30 454
All other expenses <sup>4</sup> .....	\$1,000.. 333 334

<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)				
332722. Bolt, nut, screw, rivet, and washer manufacturing											
All establishments .....	2	964	44 761	1 794 941	33 332	69 335	1 155 310	4 451 998	3 329 812	7 782 829	'307 194
Establishments with—											
1 to 4 employees .....	8	205	e	D	D	D	D	D	D	D	D
5 to 9 employees .....	6	164	1 096	46 375	838	1 737	30 799	107 329	84 659	193 131	'6 331
10 to 19 employees .....	2	139	1 997	79 338	1 411	2 857	47 483	192 498	132 525	328 689	'12 705
20 to 49 employees .....	2	216	6 951	262 548	5 114	10 528	163 426	649 601	475 819	1 124 121	'33 909
50 to 99 employees .....	2	112	7 725	301 007	5 606	11 695	183 259	754 063	707 138	1 446 143	'37 147
100 to 249 employees .....	1	102	15 393	621 066	11 150	23 061	394 401	1 540 510	1 209 404	2 762 115	'159 572
250 to 499 employees .....	4	20	6 927	275 095	5 368	11 298	179 365	755 270	496 498	1 254 650	'36 916
500 to 999 employees .....	—	5	3 188	138 333	2 615	5 671	101 348	313 576	159 039	470 590	14 762
1,000 to 2,499 employees .....	—	1	g	D	D	D	D	D	D	D	D
2,500 employees or more .....	—	—	—	—	—	—	—	—	—	—	—
Administrative records <sup>4</sup> .....	9	301	1 148	48 683	887	1 883	32 424	114 403	79 184	193 586	'5 757

<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)				
332722	Bolt, nut, screw, rivet, and washer manufacturing .....	964	44 761	1 794 941	33 332	69 335	1 155 310	4 451 998	3 329 812	7 782 829	'307 194
3327221	Aircraft fasteners, except plastics (including aerospace) (meet specifications for flying vehicles) ...	77	8 535	382 971	6 288	13 488	237 745	851 201	374 844	1 224 991	'29 058
3327223	Externally threaded metal fasteners (except aircraft types) .....	215	16 600	664 899	12 507	26 063	439 414	1 685 189	1 461 247	3 153 123	'162 304
3327225	Internally threaded metal fasteners (except aircraft types) .....	54	4 008	156 247	3 074	6 240	102 037	344 460	294 798	640 761	'21 941
3327227	Nonthreaded metal fasteners (except aircraft types) .....	82	5 937	227 142	4 233	8 444	138 151	587 392	461 188	1 049 048	'38 765
332722A	Products (except fasteners), made by cold-heading (or warm- or hot-heading) processes .....	52	4 909	177 296	3 691	7 876	116 283	539 381	448 387	983 906	'32 010

<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)
332722	Bolt, nut, screw, rivet, and washer manufacturing	2002.. N 1997.. N	X X	X X	7 172 324 7 581 822
3327221	Aircraft fasteners, except plastics (including aerospace) (meet specifications for flying vehicles)	2002.. N 1997.. N	X X	X X	1 178 676 1 208 605
33272211	Aircraft fasteners, except plastics (including aerospace) (meet specifications for flying vehicles)	2002.. N 1997.. N	X X	X X	1 087 258 1 161 743
3327221101	Aircraft bolts, except plastics (including aerospace), less than 161 KSI tensile (meets specifications for flying vehicles)	2002.. 23 1997.. 26	X X	X X	125 309 140 369
3327221106	Aircraft bolts, except plastics (including aerospace), 161 KSI tensile or more (meets specifications for flying vehicles)	2002.. 23 1997.. 30	X X	X X	292 587 248 563
3327221115	Aircraft screws and studs, except plastics (including aerospace) (meets specifications for flying vehicles)	2002.. 31 1997.. 25	X X	X X	121 101 186 530
3327221145	Aircraft locknuts, except plastics (including aerospace), including flanged locknuts (meets specifications for flying vehicles)	2002.. 20 1997.. 15	X X	X X	193 072 213 307
3327221159	Other internally threaded aircraft fasteners, except plastics (including aerospace), including flanged nuts (all types except flanged locknuts), hex square nuts (all types) and sheet metal fasteners	2002.. 19 1997.. 17	X X	X X	170 440 100 631
3327221172	Aircraft washers, except plastics (including aerospace), all types	2002.. 8 1997.. 15	X X	X X	25 186 25 357
3327221178	Aircraft rivets, except plastics (including aerospace), all types	2002.. 15 1997.. 10	X X	X X	104 360 171 579
3327221184	Aircraft pins, except plastics (including aerospace), all types	2002.. 23 1997.. 16	X X	X X	55 203 75 407
3327221Y	Aircraft fasteners, except plastics (including aerospace) (meet specifications for flying vehicles), nsk	2002.. N 1997.. N	X X	X X	91 418 46 862
3327221YVW	Aircraft fasteners, except plastics (including aerospace) (meet specifications for flying vehicles), nsk	2002.. N 1997.. N	X X	X X	91 418 46 862
3327223	Externally threaded metal fasteners (except aircraft types)	2002.. N 1997.. N	X X	X X	2 781 711 3 085 720
33272231	Externally threaded metal fasteners (except aircraft types)	2002.. N 1997.. N	X X	X X	2 518 069 2 889 071
3327223111	Mine roof bolts	2002.. 15 1997.. 14	X X	X X	110 825 159 116
3327223122	Hex bolts, including heavy, tap-and-joint (excluding high-strength structural and aircraft types)	2002.. 40 1997.. 66	X X	X X	426 706 366 056
3327223133	Other metal bolts, including square, round, plow, high-strength structural, and bent bolts (except aircraft types)	2002.. 75 1997.. 93	X X	X X	538 032 459 277
3327223144	Cap, set, machine, lag, flange, and self-locking screws (except aircraft types)	2002.. 77 1997.. 105	X X	X X	502 504 699 957
3327223155	Tapping screws (including fillister, flat, hex, oval, pan, and truss) and wood screws (including flat, oval, and round) (except aircraft types)	2002.. 46 1997.. 60	X X	X X	379 940 531 301
3327223199	Other externally threaded metal fasteners, including studs (except aircraft types)	2002.. 75 1997.. 121	X X	X X	560 062 673 364
3327223Y	Externally threaded metal fasteners (except aircraft types), nsk	2002.. N 1997.. N	X X	X X	263 642 196 649
3327223YVW	Externally threaded metal fasteners (except aircraft types), nsk	2002.. N 1997.. N	X X	X X	263 642 196 649
3327225	Internally threaded metal fasteners (except aircraft types)	2002.. N 1997.. N	X X	X X	651 206 858 123
33272251	Internally threaded metal fasteners (except aircraft types)	2002.. N 1997.. N	X X	X X	572 747 776 816
3327225104	Hex nuts, including flanges, double chamfered, washer face, flat, jam, slotted, thick, castle, heavy, machine, and locking (except aircraft types)	2002.. 52 1997.. 70	X X	X X	251 376 288 131
3327225129	Square nuts (including flat, washer, crowned, heavy, track, sleeve, and machine), sheet metal nuts, weld nuts, wing nuts, nut retainers, etc. (except aircraft types)	2002.. 18 1997.. 25	X X	X X	28 734 46 121
3327225189	Other internally threaded metal fasteners, including flanged nuts and locknuts (except aircraft types)	2002.. 45 1997.. 59	X X	X X	292 637 442 564
3327225Y	Internally threaded metal fasteners (except aircraft types), nsk	2002.. N 1997.. N	X X	X X	78 459 81 307
3327225YVW	Internally threaded metal fasteners (except aircraft types), nsk	2002.. N 1997.. N	X X	X X	78 459 81 307
3327227	Nonthreaded metal fasteners (except aircraft types)	2002.. N 1997.. N	X X	X X	949 258 970 248
33272271	Nonthreaded metal fasteners (except aircraft types)	2002.. N 1997.. N	X X	X X	833 429 912 228
3327227109	Solid rivets (except aircraft types)	2002.. 38 1997.. 46	X X	X X	89 006 117 567

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)
332722	Bolt, nut, screw, rivet, and washer manufacturing—Con.				
3327227	Nonthreaded metal fasteners (except aircraft types)—Con.				
33272271	Nonthreaded metal fasteners (except aircraft types)—Con.				
3327227115	Tubular, split (including rivet caps) and blind rivets (except aircraft types) . . . . .	2002.. 14	X	X	148 851
		1997.. 28	X	X	190 198
3327227135	Washers (except aircraft types) . . . . .	2002.. 27	X	X	157 921
		1997.. 44	X	X	176 387
3327227179	Other nonthreaded metal fasteners, including pins (except aircraft types) . . . . .	2002.. 52	X	X	437 651
		1997.. 75	X	X	428 076
3327227Y	Nonthreaded metal fasteners (except aircraft types), nsk . . . . .	2002.. N	X	X	115 829
		1997.. N	X	X	58 020
3327227YVW	Nonthreaded metal fasteners (except aircraft types), nsk . . . . .	2002.. N	X	X	115 829
		1997.. N	X	X	58 020
332722A	Products (except fasteners), made by cold-heading (or warm- or hot-heading) processes . . . . .	2002.. N	X	X	1 001 893
		1997.. N	X	X	N
332722A1	Products (except fasteners), made by cold-heading (or warm- or hot-heading) processes . . . . .	2002.. N	X	X	1 001 881
		1997.. N	X	X	N
332722A105	Aircraft parts (except fasteners), made by cold-heading (or warm- or hot-heading) processes . . . . .	2002.. 12	X	X	47 552
		1997.. N	X	X	N
332722A115	Automotive parts (except fasteners), made by cold-heading (or warm- or hot-heading) processes . . . . .	2002.. 40	X	X	750 659
		1997.. N	X	X	N
332722A135	Parts for household appliances (except fasteners), including radio and television, made by cold-heading (or warm- or hot-heading) processes . . . . .	2002.. 8	X	X	25 315
		1997.. N	X	X	N
332722A198	Turnbuckles and hose clamps, made by cold-heading (or warm- or hot-heading) processes . . . . .	2002.. 12	X	X	115 830
		1997.. N	X	X	N
332722A199	Other products (except fasteners), made by cold-heading (or warm- or hot-heading) processes . . . . .	2002.. 29	X	X	62 525
		1997.. N	X	X	N
332722AY	Products (except fasteners), made by cold-heading (or warm- or hot-heading) processes, nsk . . . . .	2002.. N	X	X	12
		1997.. N	X	X	N
332722AYVW	Products (except fasteners), made by cold-heading (or warm- or hot-heading) processes, nsk . . . . .	2002.. N	X	X	12
		1997.. N	X	X	N
332722W	Bolt, nut, screw, rivet, and washer manufacturing, nsk, total . . . . .	2002.. N	X	X	609 580
		1997.. N	X	X	600 381
332722WY	Bolt, nut, screw, rivet, and washer manufacturing, nsk, total . . . . .	2002.. N	X	X	609 580
		1997.. N	X	X	600 381
332722WYVW	Bolt, nut, screw, rivet, and washer manufacturing, nsk, for nonadministrative-record establishments . . . . .	2002.. N	X	X	422 258
		1997.. N	X	X	428 559
332722WYVY	Bolt, nut, screw, rivet, and washer manufacturing, nsk, for administrative-record establishments . . . . .	2002.. N	X	X	187 322
		1997.. N	X	X	171 822

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)
3327221	Aircraft fasteners, except plastics (including aerospace) (meet specifications for flying vehicles)	
	United States .....	2002 .. 1 178 676
	.....	1997 .. 1 208 605
	California .....	2002 .. 786 112
	.....	1997 .. 985 295
	Connecticut .....	2002 .. 17 377
	.....	1997 .. 13 987
	Illinois .....	2002 .. 52 657
	.....	1997 .. 6 664
	Michigan .....	2002 .. 14 347
	.....	1997 .. 6 671
	New York .....	2002 .. 9 461
	.....	1997 .. 13 673
	Ohio .....	2002 .. 86 972
.....	1997 .. 10 072	
Texas .....	2002 .. 6 280	
.....	1997 .. N	
3327223	Externally threaded metal fasteners (except aircraft types)	
	United States .....	2002 .. 2 781 711
	.....	1997 .. 3 085 720
	Alabama .....	2002 .. 135 197
	.....	1997 .. 82 131
	California .....	2002 .. 37 265
	.....	1997 .. 44 602
	Connecticut .....	2002 .. 44 505
	.....	1997 .. 47 074
	Florida .....	2002 .. 9 856
	.....	1997 .. 17 655
	Illinois .....	2002 .. 680 970
	.....	1997 .. 840 873
	Kentucky .....	2002 .. 51 457
	.....	1997 .. 40 317
	Massachusetts .....	2002 .. 83 530
	.....	1997 .. 50 737
	Michigan .....	2002 .. 486 596
	.....	1997 .. 543 216
	Missouri .....	2002 .. 4 340
	.....	1997 .. 22 699
	New Jersey .....	2002 .. 14 594
	.....	1997 .. 24 741
	New York .....	2002 .. 35 735
	.....	1997 .. 90 036
	North Carolina .....	2002 .. 9 057
	.....	1997 .. N
Ohio .....	2002 .. 296 902	
.....	1997 .. 401 588	
Pennsylvania .....	2002 .. 188 230	
.....	1997 .. 191 293	
Rhode Island .....	2002 .. 13 637	
.....	1997 .. 12 391	
Tennessee .....	2002 .. 18 388	
.....	1997 .. 31 399	
Texas .....	2002 .. 89 653	
.....	1997 .. 116 771	
Virginia .....	2002 .. 85 903	
.....	1997 .. 91 916	
3327225	Internally threaded metal fasteners (except aircraft types)	
	United States .....	2002 .. 651 206
	.....	1997 .. 858 123
	Alabama .....	2002 .. 5 770
	.....	1997 .. N
	California .....	2002 .. 35 674
	.....	1997 .. 58 565
	Connecticut .....	2002 .. 19 962
	.....	1997 .. 30 517
	Illinois .....	2002 .. 75 448
	.....	1997 .. 73 650
	Indiana .....	2002 .. 79 304
	.....	1997 .. 71 161
	Massachusetts .....	2002 .. 6 812
	.....	1997 .. 9 753
	Michigan .....	2002 .. 90 878
	.....	1997 .. 173 269
	New Jersey .....	2002 .. 9 669
	.....	1997 .. 14 536
	New York .....	2002 .. 15 787
.....	1997 .. 17 058	
Ohio .....	2002 .. 81 893	
.....	1997 .. 112 842	
Pennsylvania .....	2002 .. 64 397	
.....	1997 .. 103 062	
Texas .....	2002 .. 50 885	
.....	1997 .. 25 369	
Wisconsin .....	2002 .. 12 124	
.....	1997 .. 40 515	
3327227	Nonthreaded metal fasteners (except aircraft types)	
	United States .....	2002 .. 949 258
	.....	1997 .. 970 248
	California .....	2002 .. 11 411
	.....	1997 .. 34 267
	Connecticut .....	2002 .. 18 765
	.....	1997 .. 98 736
	Georgia .....	2002 .. 7 726
.....	1997 .. N	
Illinois .....	2002 .. 166 450	
.....	1997 .. 170 105	
Indiana .....	2002 .. 4 356	

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)	
3327227	Nonthreaded metal fasteners (except aircraft types)—Con.		
	United States—Con.		
		1997..	4 717
	Kentucky .....	2002..	81 551
		1997..	N
	Massachusetts .....	2002..	22 273
		1997..	23 755
	Michigan .....	2002..	124 050
		1997..	50 085
	Minnesota .....	2002..	16 391
		1997..	30 485
	New Hampshire .....	2002..	5 774
		1997..	N
	New York .....	2002..	45 764
		1997..	54 670
	Ohio .....	2002..	37 464
		1997..	62 882
	Pennsylvania .....	2002..	32 952
		1997..	35 230
	Rhode Island .....	2002..	6 772
	1997..	N	
Tennessee .....	2002..	9 949	
	1997..	N	
Wisconsin .....	2002..	158 685	
	1997..	107 236	
332722A	Products (except fasteners), made by cold-heading (or warm- or hot-heading) processes		
	United States .....		
		2002..	1 001 893
		1997..	N
	California .....	2002..	58 506
		1997..	N
	Connecticut .....	2002..	12 032
		1997..	N
	Illinois .....	2002..	117 777
		1997..	N
Massachusetts .....	2002..	6 622	
	1997..	N	
Michigan .....	2002..	490 227	
	1997..	N	
Ohio .....	2002..	61 904	
	1997..	N	

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)
332722	Bolt, nut, screw, rivet, and washer manufacturing		
00900001	Total materials .....	X	2 397 266
	.....2002..	X	2 559 916
	.....1997..	X	
33200005	Fabricated metal products, including forgings .....	X	176 963
	.....2002..	X	158 418
	.....1997..	X	
33100035	Castings, rough and semifinished.....	X	2 540
	.....2002..	X	5 874
	.....1997..	X	
33120071	Steel bars and bar shapes (excluding castings, forgings, and fabricated metal products) .....	X	149 430
	.....2002..	X	215 552
	.....1997..	X	
33120016	Steel sheet and strip (including tinplate) .....	X	74 902
	.....2002..	X	N
	.....1997..	X	
33120025	Steel wire and wire products .....	X	579 991
	.....2002..	X	854 999
	.....1997..	X	
33120035	All other steel shapes and forms (excluding castings, forgings, and fabricated metal products) .....	X	150 095
	.....2002..	X	67 178
	.....1997..	X	
33142107	Copper and copper-base alloy rod, bar, and bar shapes (excluding castings, forgings, and fabricated metal products) .....	X	42 164
	.....2002..	X	24 676
	.....1997..	X	
33142113	All other copper and copper-base alloy shapes and forms (excluding castings, forgings, fabricated metal products, rods, bars, mechanical wire, sheet, plate, and strip) .....	X	26 986
	.....2002..	X	N
	.....1997..	X	
33131601	Aluminum and aluminum-base alloy extruded shapes (extruded rod, bar, pipe, tube, etc.) .....	X	D
	.....2002..	X	N
	.....1997..	X	
33100059	All other aluminum and aluminum-base alloy shapes and forms (wire, rolled rod and bar, powder, welded tubing, etc.) .....	X	25 843
	.....2002..	X	54 785
	.....1997..	X	
33100082	Other nonferrous metal shapes and forms (excluding aluminum and aluminum-base alloy and copper and copper-base alloy castings, forgings, and fabricated metal products) .....	X	67 757
	.....2002..	X	N
	.....1997..	X	
32221001	Paperboard containers, boxes, and corrugated paperboard .....	X	27 261
	.....2002..	X	33 327
	.....1997..	X	
33510000	Special dies, tools, die sets, jigs, and fixtures (excluding cutting tools for machine tools) .....	X	D
	.....2002..	X	172 960
	.....1997..	X	
00970099	All other materials and components, parts, containers, and supplies.....	X	485 257
	.....2002..	X	484 924
	.....1997..	X	
00971000	Materials, ingredients, containers, and supplies, nsk .....	X	470 338
	.....2002..	X	487 223
	.....1997..	X	

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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### **332722 BOLT, NUT, SCREW, RIVET, AND WASHER MANUFACTURING**

This U.S. industry comprises establishments primarily engaged in manufacturing metal bolts, nuts, screws, rivets, washers, and other industrial fasteners using machines, such as headers, threaders, and nut forming machines.

# 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.



2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published
3323113241	3323113241	3323113241	3323221	3323221	3323221	3324101	3324101	3324101
3323113YVW	3323113YVW	3323113YVW	3323221101	3323221101	3323221101	3324101101	3324101101	3324101101
332311W	332311W	332311W	3323221106	3323221106	3323221106	3324101206	3324101206	3324101206
332311WYVW	332311WYVW	332311WYVW	3323221211	3323221211	3323221211	3324101311	3324101311	3324101311
332311WYVY	332311WYVY	332311WYVY	3323221216	3323221216	3323221216	3324101YVW	3324101YVW	3324101YVW
3323121	3323121	3323121	3323221YVW	3323221YVW	3323221YVW	3324105	3324105	3324105
3323121101	3323121101	3323121101	3323223	3323223	3323223	3324105106	3324105106	3324105106
3323121206	3323121206	3323121206	3323223101	3323223101	3323223101	3324105111	3324105111	3324105111
3323121211	3323121211	3323121211	3323223106	3323223106	3323223106	3324105126	3324105126	3324105126
3323121216	3323121216	3323121216	3323223111	3323223111	3323223111	3324105131	3324105131	3324105131
3323121221	3323121221	3323121221	3323223YVW	3323223YVW	3323223YVW	3324105141 pt	3324105141 pt	3324105101
3323121226	3323121226	3323121226	3323227	3323227	3323227	3324105141 pt	3324105141 pt	3324105146
3323121231	3323121231	3323121231	3323227101	3323227101	3323227101	3324105169 pt	3324105169 pt	3324105151
3323121YVW	3323121YVW	3323121YVW	3323227206	3323227206	3323227206	3324105169 pt	3324105169 pt	3324105161
3323123	3323123	3323123	3323227211	3323227211	3323227211	3324105171	3324105171	3324105171
3323123100	3323123100	3323123100	3323227216	3323227216	3323227216	3324105181	3324105181	3324105181
3323125	3323125	3323125	3323227221	3323227221	3323227221	3324105186	3324105186	3324105186
3323125106	3323125106	3323125106	3323227YVW	3323227YVW	3323227YVW	3324105291	3324105291	3324105291
3323125111	3323125111	3323125111	3323227YVW	3323227YVW	3323227YVW	3324105YVW	3324105YVW	3324105YVW
3323125116	3323125116	3323125116	3323229	3323229	3323229	3324107	332420A	332420A
3323125121	3323125121	3323125121	3323229106	3323229106	3323229106	3324107100	332420A100	332420A100
3323125126	3323125126	3323125126	3323229111	3323229111	3323229111	332410W	332410W	332410W
3323125131	3323125131	3323125131	3323229116	3323229116	3323229116	332410WYVW	332410WYVW	332410WYVW
3323125136	3323125136	3323125136	3323229121	3323229121	3323229121	332410WYVY	332410WYVY	332410WYVY
3323125201	3323125201	3323125201	3323229201	3323229201	3323229201	3324207	3324207	3324207
3323125YVW	3323125YVW	3323125YVW	3323229YVW	3323229YVW	3323229YVW	3324207101	3324207101	3324207101
332312W	332312W	332312W	332322A	332322A	332322A	3324207106	3324207106	3324207106
332312WYVW	332312WYVW	332312WYVW	332322A101	332322A101	332322A101	3324207YVW	3324207YVW	3324207YVW
332312WYVY	332312WYVY	332312WYVY	332322A106	332322A106	332322A106	3324209	3324209	3324209
3323130	3323130	3323130	332322A111	332322A111	332322A111	3324209101	3324209101	3324209101
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3323130116	3323130116	3323130116	332322AYVW	332322AYVW	332322AYVW	3324209111	3324209111	3324209111
3323130121	3323130121	3323130121	332322C	332322C	332322C	3324209YVW	3324209YVW	3324209YVW
3323130226	3323130226	3323130226	332322C101	332322C101	332322C101	332420C	332420C	332420C
3323130231	3323130231	3323130231	332322C206	332322C206	332322C206	332420C101	332420C101	332420C101
3323130236	3323130236	3323130236	332322C311	332322C311	332322C311	332420C106	332420C106	332420C106
3323130301	3323130301	3323130301	332322C3YVW	332322C3YVW	332322C3YVW	332420C111	332420C111	332420C111
3323130346	3323130346	3323130346	332322F pt	332322F	332322W pt	332420C116	332420C116	332420C116
3323130406	3323130406	3323130406	332322F101 pt	332322F101 pt	332322F101 pt	332420C121	332420C121	332420C121
3323130YVW	3323130YVW	3323130YVW	332322F101 pt	332322F101 pt	332322F101 pt	332420C126	332420C126	332420C126
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3323211201	3323211201	3323211201	332322FYVW pt	332322FYVW pt	332322FYVW pt	332420E221	332420E221	332420E221
3323211204	3323211204	3323211204	332322FYVW pt	332322FYVW pt	332322FYVW pt	332420E226	332420E226	332420E226
3323211207	3323211207	3323211207	332322G	332322G	332322G	332420EYVW	332420EYVW	332420EYVW
3323211222	3323211222	3323211222	332322G101	332322G101	332322G101	332420G	332420G	332420G
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3323211331	3323211331	3323211331	332322G211	332322G211	332322G211	332420G111	332420G111	332420G111
3323211334	3323211334	3323211334	332322G216	332322G216	332322G216	332420G116	332420G116	332420G116
3323211440	3323211440	3323211440	332322G326	332322G326	332322G326	332420G121	332420G121	332420G121
3323211443	3323211443	3323211443	332322G331	332322G331	332322G331	332420G126	332420G126	332420G126
3323211446	3323211446	3323211446	332322G336	332322G336	332322G336	332420G131	332420G131	332420G131
3323211549	3323211549	3323211549	332322GYVW	332322GYVW	332322GYVW	332420G136	332420G136	332420G136
3323211552	3323211552	3323211552	332322W pt	332322W pt	332322W pt	332420G141	332420G141	332420G141
3323211555	3323211555	3323211555	332322W pt	332322W pt	332322W pt	332420G246	332420G246	332420G246
3323211661	3323211661	3323211661	332322W pt	332322W pt	332322W pt	332420G351	332420G351	332420G351
3323211664	3323211664	3323211664	332322W pt	332322W pt	332322W pt	332420G356	332420G356	332420G356
3323211667	3323211667	3323211667	332322W pt	332322W pt	332322W pt	332420GYVW	332420GYVW	332420GYVW
3323211758	3323211758	3323211758	332322W pt	332322W pt	332322W pt	332420W	332420W	332420W
3323211770	3323211770	3323211770	332322WYVW pt	332322WYVW pt	332322WYVW pt	332420WYVW	332420WYVW	332420WYVW
3323211837	3323211837	3323211837	332322WYVY pt	332322WYVY pt	332322WYVY pt	332420WYVY	332420WYVY	332420WYVY
3323211YVW	3323211YVW	3323211YVW	332322WYVY pt	332322WYVY pt	332322WYVY pt	3324311	3324311	3324311
3323213	3323213	3323213	332322WYVY pt	332322WYVY pt	332322WYVY pt	3324311101	3324311101	3324311101
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3323213111	3323213111	3323213111	332322WYVY pt	332322WYVY pt	332322WYVY pt	3324311YVW	3324311YVW	3324311YVW
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3323213121	3323213121	3323213121	332322WYVY pt	332322WYVY pt	332322WYVY pt	3324313100	3324313100	3324313100
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3323213231	3323213231	3323213231	332322WYVY pt	332322WYVY pt	332322WYVY pt	332431WYVW	332431WYVW	332431WYVW
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3323213246	3323213246	3323213246	332322WYVY pt	332322WYVY pt	332322WYVY pt	3324391101	3324391101	3324391101
3323213251	3323213251	3323213251	332322WYVY pt	332322WYVY pt	332322WYVY pt	3324391306	3324391306	3324391306
3323213306	3323213306	3323213306	332322WYVY pt	332322WYVY pt	332322WYVY pt	3324391311	3324391311	3324391311
3323213YVW	3323213YVW	3323213YVW	332322WYVY pt	332322WYVY pt	332322WYVY pt	3324391YVW	3324391YVW	3324391YVW
3323215	3323215	3323215	332322WYVY pt	332322WYVY pt	332322WYVY pt	3324393	3324393	3324393
3323215102	3323215102	3323215102 pt	332322WYVY pt	332322WYVY pt	332322WYVY pt	3324393100	3324393100	3324393100
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2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published
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332911D102 pt	332911D102 pt	332911D105	3329191205	3329191205	3329191205	332994WYVWV pt	332994WYVWV pt	332994WYVWV pt
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332911D108 pt	332911D108 pt	332911D109	3329191209	3329191209	3329191209			
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3329127100	3329127100	3329127100	3329194337	3329193337	3329193337	3329970101	3329970101	3329970101
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3329129	3329129	3329129	3329194341	3329193341	3329193341	3329970YVW	3329970YVW	3329970YVW
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332912D	332912D	332912D	3329194353	3329193353	3329193353	3329980290	3329980290	3329980290
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			3329194387	3329193387	3329193387	3329995111	3329995111	3329994111
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3329133	3329133	3329133	3329194433	3329193433	3329193433	3329999H pt	3325109 pt	3325109 pt
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			3329194455	3329193455	3329193455			



2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published	2002 published	2002 collected	1997 published
332999W pt . . . . .	339912W pt . . . . .	339912W pt	332999WYWW pt . . .	332999WYWW pt . .	332999WYWW pt	332999WYWY pt . . .	332510WYWY pt . . .	332510WYWY pt
332999WYWW pt . . .	332211WYWW pt . .	332211WYWW pt	332999WYWW pt . . .	339912WYWW pt . .	339912WYWW pt	332999WYWY pt . . .	332999WYWY pt . . .	332999WYWY pt
332999WYWW pt . . .	332510WYWW pt . .	332510WYWW pt	332999WYWY pt . . .	332211WYWY pt . . .	332211WYWY pt	332999WYWY pt . . .	339912WYWY pt . . .	339912WYWY pt

