



## Statistics on Manufacturing

### Introduction

Manufacturing involves mechanically or chemically blending or transforming materials or substances into new products, or assembling component parts of manufactured products if the new product is neither a structure or some other kind of fixed improvement. Manufacturers normally sell their products through wholesalers or direct to industrial users. Some manufacturers in a few industries sell directly to household consumers, but where possible, these sales activities and outlet stores are classified as retail trade establishments.

The U.S. Census Bureau's censuses and current surveys of manufacturers' are the principal source of data about the Manufacturing sector of the U.S. economy. Data were first collected on manufacturing establishments during the 1810 decennial census. The decennial censuses continued to include collection of manufacturing data (with the exception of 1830) until 1900. From 1905 through 1919, the U.S. Census Bureau conducted a manufactures census every 5 years and then every 2 years thereafter, through 1939. As a result of World War II and war-related data collection, the U.S. Census Bureau resumed the 5-year schedule of censuses in 1947. Presently, economic censuses are taken for years ending in "2" and "7."

Manufacturing data also are collected for the Outlying Areas. The collection of manufacturing data for Puerto Rico began in 1901 (although not reported in every subsequent census). Guam and the U.S. Virgin Islands were added to

the enumeration in 1958, followed by the introduction of data collection in the Northern Mariana Islands in 1982. Economic data from the Outlying Areas are collected in conjunction with the stateside enumeration (i.e., in years ending in "2" and "7").

In addition to the economic census, the Annual Survey of Manufactures (ASM) collects "census-type" data for noncensal years. Data are collected from a sample of manufactures and has been conducted since 1949.

Current Industrial Reports (CIRs), a series of annual, quarterly, and monthly surveys, some of which date from early this century, contain data on production, shipments, and/or inventories of specific products or on special subjects.

Title 13 the U.S. Code authorizes all of the economic census and surveys and requires response to the census and the majority of annual surveys. Also, this law assures that data provided by business establishments will remain confidential and be published in summary form only. To maintain strict enforcement of each establishments confidentiality, the Census Bureau makes certain no individual firms' operations can be identified in its printed or electronic publications. Furthermore, Census Bureau employees are subject to heavy penalties for violating the law's confidentiality provisions.

Manufacturing data from the 1997 Economic Census were collected and published according to the North American Industry Classification System (NAICS). This new classification system

replaced the Standard Industrial Classification (SIC) coding system. The NAICS was implemented by the United States, Canada, and Mexico.

Collection and publication of economic data are primarily in terms of the establishment—a single physical location at which a manufacturing activity, as defined by the NAICS, takes place. In general, manufacturing industries are classified by the NAICS, by principal type of product produced. The NAICS (which uses a three-digit industry code) has 21 major groups for manufacturing:

- 311 Food Manufacturing
- 312 Beverage and Tobacco Product Manufacturing
- 313 Textile Mills
- 314 Textile Product Mills
- 315 Apparel Manufacturing
- 316 Leather and Allied Product Manufacturing
- 321 Wood Product Manufacturing
- 322 Paper Manufacturing
- 323 Printing and Related Support Activities
- 324 Petroleum and Coal Products Manufacturing
- 325 Chemical Manufacturing
- 326 Plastics and Rubber Products Manufacturing
- 327 Nonmetallic Mineral Product Manufacturing
- 331 Primary Metal Manufacturing
- 332 Fabricated Metal Product Manufacturing
- 333 Machinery Manufacturing
- 334 Computer and Electronic Product Manufacturing
- 335 Electrical Equipment, Appliance, and Component Manufacturing

- 336 Transportation Equipment Manufacturing
- 337 Furniture and Related Product Manufacturing
- 339 Miscellaneous Manufacturing

The first two characters of the NAICS designates the sector. Additional digits provide more specific detail, for example, the third the subsector, the fourth the industry group, and the fifth the NAICS industry. The five-digit industry

level is the most detailed level for the three participating Nations' economies. A sixth digit identifies specific national industries. Under the NAICS, the United States has 659 such industries. This structure may be illustrated as follows:

NAICS level	NAICS code	Description
Sector	31-33	Manufacturing
Subsector	336	Transportation Equipment Manufacturing
Industry group	3361	Motor Vehicle Manufacturing
Industry	33611	Automobile and Light Duty Motor Vehicle Manufacturing
U.S. industry	336111	Automobile Manufacturing

At the request of their local governments, the Outlying Areas will not implement the NAICS until the 2002 Economic Census. Until 2002, these data will be published according to the SIC coding system. Additionally, the Commodity Flow Survey and Vehicle Inventory and Use Survey did not implement the NAICS until after the 1997 Economic Census was completed. These data were coded according to the SICs 20 major groups for manufacturing as follows:

- 20 Food and Kindred Products
- 21 Tobacco Products
- 22 Textile Mill Products
- 23 Apparel and Other Finished Products Made From Fabrics and Similar Materials
- 24 Lumber and Wood Products (Except Furniture)

- 25 Furniture and Fixtures
- 26 Paper and Allied Products
- 27 Printing, Publishing, and Allied Industries
- 28 Chemicals and Allied Products
- 29 Petroleum Refining and Related Industries
- 30 Rubber and Miscellaneous Plastics Products
- 31 Leather and Leather Products
- 32 Stone, Clay, Glass, and Concrete Products
- 33 Primary Metal Industries
- 34 Fabricated Metal Products (Except Machinery and Transportation Equipment)
- 35 Industrial and Commercial Machinery and Computer Equipment
- 36 Electronic and Other Electronic Equipment and Components (Except Computer Equipment)

- 37 Transportation Equipment
- 38 Measuring, Analyzing, and Controlling Instruments; Photographic, Medical, and Optical Goods; Watches and Clocks
- 39 Miscellaneous Manufacturing Industries

These major SIC groups are subdivided into three-digit industry groups, which in turn are subdivided into four-digit industries. Beyond this, the Census Bureau had developed a system for classifying manufactured products into approximately 1,500 product classes (five-digit) and 11,000 product codes (seven-digit), in a manner consistent with the four-digit SIC for the industry from which the products originate. The SIC coding system can be illustrated as follows:

SIC level	SIC code	Description
Major group	38	Measuring, analyzing, and controlling instruments; photographic, medical, and optical goods; watches and clocks
Industry group	386	Photographic equipment
Industry	3861	Photographic equipment and supplies
Product class	38611	Still picture equipment
Product	38611 11	Hand-type cameras

## What Subjects Do the Censuses and Surveys Cover?

The earliest censuses tended to concentrate on raw materials used, number of people employed, machinery, expenditures, and production. As the census matured, the collection of data was expanded to include—the number of establishments, payroll, value of shipments, inventories, production hours worked, and the value added by manufacture. The Annual Survey of manufactures (ASM) estimates similar data, while the surveys for the CIRs deal mainly with the quantity and value of shipments of particular products, and occasionally with data on production and inventories; unfilled orders, receipts, and consumption; and comparative data on domestic production, exports, and imports of the products they cover (with estimates of "apparent consumption" of commodities in the United States).

## How Are the Data Collected?

In the 1997 Economic Census, approximately 210,000 manufacturing establishments were surveyed by mail on one of 251 industry-tailored questionnaires. The U.S. Census Bureau obtained data from an additional 155,000 small single-establishment businesses with payroll from Federal administrative records.

The ASM collects statistics from a sample of about 55,000 of the 365,000 establishments covered in the census. During census years, the establishments participating in the ASM sample receive a questionnaire that is more extensive than those sent to establishments which do not participate in the ASM. These more detailed questionnaires include inquiries about capital expenditures and selected purchased services. During

each of the 4 years between censuses, the U.S. Census Bureau surveys only the ASM establishments.

Current Industrial Report (CIR) data are collected from nearly 75 separate surveys, which are usually restricted to producers of particular products, and are conducted monthly, quarterly, or annually. The U.S. Census Bureau collects this data through a mailout/mailback questionnaire using address lists prepared from the preceding census or sample frame.

## Who Uses Manufacturing Statistics?

Federal agencies make extensive use of manufacturing data. For example, the U.S. Census Bureau of Economic Analysis, uses the data to calculate the Gross Domestic Product; the Federal Reserve Board uses these data to develop its monthly index of industrial production; and the U.S. Department of Labor assesses the data to measure productivity and price fluctuations. State and local governments and chambers of commerce use census data in studying the economic structure and changes occurring in their areas. Individual manufacturers and distributors consult the statistics when establishing measures of their potential markets, forecasting sales, analyzing sales performance, and locating business establishments. Trade associations use census information to evaluate changes in their industries. Business magazines and academic researchers also rely on census and survey facts as background for articles and projections. The census figures serve as benchmarks not only for other U.S. Census Bureau surveys, but also for many other statistical series on manufactures.

## Census Reports

Data collected in the 1997 Economic Census were published in several nationwide, economy-wide reports between 1999 and 2001. The reports are as follows:

- *Core Business Statistics*
  - *Advance Report.* This report contains the first data ever published on a NAICS basis and contains national data at the sector and subsector levels. The NAICS table was limited to 1997 data, but a separate SIC code-based table shows 1992 and 1997 figures at the two-digit SIC level to permit calculation of percentage change in sales or employment over the 5-year period.
  - *Comparative Statistics.* This report supersedes the Advance Report. It presents two-, three-, and four-digit SIC statistics at the state and U.S. level.
  - *Bridge Between NAICS and SIC.* The Bridge Between NAICS and SIC presents 1997 data cross-tabulated by the old and new classification systems identifying the lowest common denominator between the two systems.
  - *Nonemployer Statistics.* This report summarizes the number of establishments and sales and receipts of companies with no paid employees.
- *Company Statistics.* This series shows data from the 1997 Economic Census for minority- and women-owned businesses and business enterprises. The series consists of *Company Statistics*, which includes individual reports displaying data for

firms owned by women and for four specific racial or ethnic groups (Black, Hispanic, Asian and Pacific Islander, and American Indian and Alaska Native), a general *Summary*, and the *Business Expenses* report. The data are shown by industrial classification for the United States, states and the District of Columbia, and for selected metropolitan areas, counties, and places. Information displayed includes size of firm (employment and receipts) and legal form of organization. The *Business Expenses* report includes national-level data on operating expenses for SIC-based merchant wholesale trade, retail trade, service industries, communications industries, transportation and warehousing, and travel industries.

In addition to press releases, the U.S. Census Bureau released the following manufacturing reports for the 1997 Economic Census (all of which were available in electronic format. Selected reports also were published in printed format):

- **Industry Series.** This series of more than 500 reports contains detailed industry statistics at the NAICS six- and eight-digit industry levels. Product statistics are also provided at the NAICS seven-, eight-, and ten-digit product code levels. Data on materials consumed are reported for each six-digit NAICS level.
- **Geographic Area Series.** This series presents manufacturing data in two reports:
  - The *Geographic Area Series* presents detailed industry statistics at the NAICS sector level by state, as well as selected industry statistics at the three-, four-, five-, and six-digit NAICS level for states, metropolitan areas, counties, and places.
  - *Location of Manufacturing Plants* reports the number of manufacturing establishments, by employment

size, at the three- and six-digit NAICS level for the Nation, states, counties, places, and five-digit ZIP Code.

- **Subject Series**
  - *General Summary.* This summary provides detailed industry statistics at the NAICS sector and three-, four-, five-, and six-digit levels for the Nation, states, and metropolitan areas.
  - *Product Summary.* This report provides product statistics at seven-, eight-, and ten-digit product codes (developed by the U.S. Census Bureau) and includes detailed data from the Current Industrial Report.
  - *Materials Consumed Summary.* Presents the amount of materials consumed by manufacturers at the six-digit NAICS level.
  - *Concentration Ratios in Manufacturing.* Presents the percentage of industry shipments accounted for by the fourth, eighth, twentieth, and fiftieth largest companies (plus the Herfindahl Index) by six-digit NAICS industry.

Manufacturing data collected from the 1997 Economic Census in the Outlying Areas were contained in the following reports:

- **Manufactures—Puerto Rico.** This report included data on the number of establishments, employment, proprietors and partners working, payroll, value of shipments, value added by manufacturers, class of customer, inventories, costs of materials, capital expenditures, and country of destination. Statistics were shown by industry and geographic area.
- **Virgin Islands.** Data were presented by kind of business and included data for St. Thomas and St. John (which were combined to prevent disclosure problems), St. Croix, and the towns of

Charlotte Amalie, Christiansted, and Frederiksted.

- **Guam.** Manufactures data were presented by kind of business with tables for Guam and its election districts.
- **Northern Mariana Islands.** This report presented data by kind of business, with tables for the Northern Mariana Islands and the four municipalities.

## Current Survey Reports

- **Annual Survey of Manufactures (ASM).** This series of reports is published for years other than the census years. The latter are excluded because census reports include statistics collected in the ASM. The ASM reports below typically appear 12 to 18 months after the close of the reference year.
  - *Statistics for Industry Groups and Industries* offers general data similar to those in the census *Industry Series* at the national level, with comparable figures for the previous year.
  - *Value of Product Shipments* reports provide estimates of the value of shipments for about 1,750 product classes (seven-digit product class code) and multi-industry products.
  - *Geographic Area Statistics* reports provide additional data for three- and four-digit industries. Data are for the United States and each state.
- **Current Industrial Reports (CIRs)** are a series of reports representing the range and variety of manufacturing establishments within the United States, from *Aerospace Orders (MA37D)* to *Yarn Production (MA22F)*. Some of the monthly and quarterly series are linked to separate annual reports; those that are not have annual summaries within the same series. The reports by commodity (see the

Census Bureau's publication catalog on the Internet for titles and frequency). The following general-purpose reports are not restricted to one industry group:

- *Manufacturers' Shipments, Inventories, and Orders (M3)*. This triannual report series provides measures of manufacturing activities at the national level. These reports are issued approximately 30 days after the reference month.
- *Pollution Abatement Costs and Expenditures (MA200)*. This report contains annual data on total operating costs, capital expenditures, and cost recovered by manufacture for air, water, and solid-waste pollution abatement in the United States during the year.
- *Manufacturing Energy Consumption Survey (MECS)*. This is the Energy Information Administration's (EIA) survey of energy use and related activities by U.S. manufacturers. The survey is administered and compiled by the Census Bureau. The EIA provides full survey funding, directs design, and publishes data products.
- *Survey of Plant Capacity Utilization (MQ-C1)*. Data that are collected for the fourth quarter include: Actual value of production; estimated value of production at full production capability; estimated value of production achievable under national emergency conditions, number of shifts, days per week, hours per week, average number of production workers, and hours under both actual and full production scenarios. Data also are collected to explain why the plant operates at less than full production, if appropriate; reason(s) why their estimate of full production capability changed between the 2 reference years; and how quickly the plant could reach full production, and national emergency levels of production, if required.

- *Plant and Equipment Survey (PESVY)*. This report provides data on current spending and plans for new spending in the U.S. on business, plant, and equipment. Basic data on spending for plant and equipment were collected for each quarter, with additional data obtained for the 3rd and 4th quarters. Quarterly data included actual expenditures for the prior quarter, and planned total spending for each of the next three quarters, expenditures for new facilities and the expansion or replacement of existing facilities. Additional 3rd and 4th quarter data included planned spending for the next year. Annual data included—total actual and planned expenditures, and expenditures by type. (Prior to 1991, annual data included planned capital expenditures by type.)

### Other Aids and Sources of Data

- More information about the scope, coverage, classification system, data items, and publications for each of the economic censuses and related surveys are published in the *Guide to the 1997 Economic Census and Related Statistics* (<http://www.census.gov/epcd/www/guide.html>); *The Statistical Abstract of the United States*; the periodic *County and City Data Book* (latest, 1994), *State and Metropolitan Area Data Book* (latest, 1998), *Historical Statistics of the United States From Colonial Times to 1970* (available from the Government Printing Office, out-of-print commercially), and *County and State Profiles* (latest, 1997). U.S. Census Bureau data also appear in trade journals, textbooks, and other secondary sources. Additional information on the methodology, procedures, and history of the economic censuses will be published in the *History of the 1997 Economic Census* (<http://www.census.gov/econ/www/history.html>).

- Information on manufacturing industries appear in digest form in reports from the economic census and surveys are available from more than 1,400 Government and U.S. Census Bureau depository libraries across the country. These depositories consist primarily of college and university libraries. Many smaller libraries also maintain collections of census publications.
- Business and Industry Data Centers (BIDCs) are the result of a U.S. Census Bureau pilot project launched in 1988. The U.S. Census Bureau and other Federal agencies furnish economic data and related assistance and training to aid a number of BIDCs in furthering economic development in their states.
- All of the states, plus the District of Columbia, Puerto Rico, Guam, and the U.S. Virgin Islands of the United States have Census State Data Centers that assist the public with printed and electronic census data. Additionally, some states also have business and industry data centers, which specialize in economic data.
- A network of Regional Data Centers (RDCs) and the Suitland, MD, research facility offer qualified researchers restricted access, in secure environments, to data collected by the U.S. Census Bureau's surveys and censuses that are not included within the agency's publication program. Researchers must submit research proposals to the RDCs and the Census Bureau for review and approval. Upon approval, researchers are subject to the confidentiality restrictions of Title 13, United States Code-Census.

### How the Data Are Published

Most of the Manufacturing sector statistics are issued on CD-ROM, and online through the U.S. Census Bureau's American Factfinder and in PDF format at <http://www.census.gov>. Printed

products may be ordered by mail, telephone, and the Internet from—

Superintendent of Documents  
U.S. Government Printing Office  
P.O. Box 371954  
Pittsburgh, PA 15250-7954  
Telephone: 202-512-1800  
Fax: 202-512-2250  
<http://www.gpo.gov>

Electronic products may be purchased by mail from—

U.S. Department of Commerce  
U.S. Census Bureau (MS1921)  
P.O. Box 277943  
Atlanta, GA 30384-7943

Electronic products may be ordered by telephone or fax from—

Administrative and Customer  
Services Division  
Customer Services Branch  
U.S. Census Bureau  
Washington, DC 20233  
Telephone: 301-457-4100  
Fax: 888-249-7295 or  
301-457-3842

Customer Services can print and bind any PDF report on demand, priced at \$25 or more per report, depending upon the number of pages. (A list of reports, with page counts, is available via the U.S. Census Bureau's Internet site

(<http://www.census.gov>), in the Economic Census section of the *Catalog: Publications*.)

### **Factfinder for the Nation**

General information about the U.S. Census Bureau's various statistical programs are contained in the publications of the Factfinder for the Nation. Inquiries and suggestions about the manufactures statistics program and other U.S. Census Bureau activities are invited. Write to—

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