

Public and Private Sector Uses of Economic Census Data

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“The uses of these data are limited only by the failures of human imagination.”

Gaylord Worden**

This article describes the principal uses of the data collected in the Economic Census. Namely, the data serve as a framework and statistical benchmark for current economic surveys; as source data for calculating composite measures of the nation’s economy; and as the basis for planning and monitoring of national, state, and local economic policies and programs. The data also are used for research, planning, marketing, and management by private sector businesses. In addition, they are important for measuring and tracking changes in economic activity.

The United States economy is large and complex. Millions of private and public sector decision-makers are involved daily in keeping it healthy and vigorous. They rely on accurate information from the nation’s economic statistics programs to understand the economy’s complexities and to reduce the uncertainties of decision-making.

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**This article is based upon the 1987 GIQ article, “Uses of Economic Census Data,” by the late Gaylord Worden, formerly Chief of Industry Division, U.S. Bureau of the Census. The present article, however, adds substantial new information to take account of changes for the 1997 Economic Census and to suggest further data uses.

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The Economic Census, conducted once every five years, is the foundation of the nation's economic statistics programs. It gathers the most comprehensive collection of data on the nation's economic activity: no other statistical program provides similar data on the economy on such a scale.

Because these data are consistent, reliable, and detailed, they are used in myriad ways to address the economy's structure and performance. They are used to answer specific questions on inputs used and outputs produced by industry or by type of business—both nationally and at successively smaller geographic areas. Moreover, the data collected in a comprehensive Economic Census provide the controls and sampling frames for the many surveys that produce more current, but less detailed, measures of the economy between the five-year censuses.

A CLOSER LOOK AT THE BUILDING BLOCKS OF THE U.S. ECONOMY

Economic Census data are collected in such a way that the data form a series of building blocks that reflect the structure of the U.S. economy. Much like a child's set of legos, these building blocks of data can be combined and re-combined in any number of configurations, always producing new structures of knowledge about how the economy functions.

The principal building blocks in terms of which the data are collected are these:

- Level of business activity;
- Level of geographic detail; and
- Type of industry.

Level of Business Activity

Establishment data, company data, and other data are three chief ways of classifying the level of business activity at which Economic Census data are collected.

Establishment Data

For each of the economic sectors covered by the census, every plant, store, or other business location with employees is identified and included in the count. Each physical site is called an "establishment," hence, the term, "establishment level data." While the "establishment" refers to the actual location of the economic activity, the "company" or the "firm" refers to that aspect of the organization that "owns" or "controls" the establishment. One company may own many establishments. The establishment and the company are one and the same *only* when there is just one establishment.

Indeed, the usual practice of the Census Bureau is to collect data from a company's business headquarters for *each establishment* that it owns.¹ It is this procedure that produces the detailed establishment level data that is the hallmark of the Economic Census.

For each establishment, data are collected on employment, payroll, and other inputs and costs. Comparable data on shipments, sales, revenues, receipts, and other measures of output or production help complete the measure of economic activity. The amount of detail on inputs and production varies significantly by sector. The most specific breakdowns are pro-

vided for the manufacturing sector where Economic Census data are collected on nearly 1,500 input materials and over 12,000 products.

Each and every establishment—based upon what it produces, whether goods or services—is assigned a 6-digit numerical code representing its industrial classification. From the 1997 Economic Census onward, coding of all establishments will be done in terms of the new North American Industry Classification System (NAICS), the significance of which will be discussed below.

Company Data

An additional data collection tool is the assignment of a common identifier to all establishments owned by the same company. This produces “company level data.” Company level data provide a rich dataset for analyzing the structure and organization of economic activity. By linking establishment and company data once every five years during the census, the opportunity is provided for data users to make better use of the combinations of data (on establishments and companies) available in years between the censuses. For example, data used to calculate—both quarterly and annually—the Gross Domestic Product rely upon *establishment* data from many surveys, in combination with statistical information from *company* level reports filed with the Internal Revenue Service.

Other Data

Other economic data collection programs are included in the Economic Census. One sample survey collects inventory and use information on the nation’s fleet of 60 million private and commercial trucks. Another reports on the origin and destination of commodities shipped from selected industries. A special program provides data on minority-owned business enterprises, and another provides data on women-owned businesses.

Still other programs provide specific data on water use by manufacturers and mining operations, and yet another, on types of textile machinery. In addition, there is an Economic Census of Outlying Areas collecting selected economic sector data from Puerto Rico, U.S. Virgin Islands, Guam, and the Commonwealth of the Northern Mariana Islands.

Type of Industry

The 1997 Economic Census will be the first to conduct and report its data collection effort in terms of the new North American Industry Classification System (NAICS)—developed jointly among the U.S., Canada, and Mexico.² Economic Censuses *prior to 1997* collected and reported data on economic activity in terms of the Standard Industrial Classification (SIC) system—initiated in the United States during the 1930s.

Despite periodic revisions, the SIC ultimately became outmoded. It could no longer squeeze rapidly emerging, new types of economic activity into its conventional 10 sectors—agriculture; mining; construction; manufacturing; transportation; communications and utilities; wholesale trade; retail trade; finance, insurance and real estate; services; and public administration.

By contrast, NAICS classifies the economy into 20 sectors. These sectors more accurately reflect today's economy and its increasing domination by the service sector and, in particular, by emerging information industries. The 20 sectors are:

- Agriculture, Forestry, Fishing and Hunting;
- Mining;
- Utilities;
- Construction;
- Manufacturing;
- Wholesale Trade;
- Retail Trade;
- Transportation and Warehousing;
- Information;
- Finance and Insurance;
- Real Estate and Rental and Leasing;
- Professional, Scientific, and Technical Services;
- Management of Companies and Enterprises;
- Administrative and Support, Waste Management and Remediation Services;
- Educational Services;
- Health Care and Social Assistance;
- Arts, Entertainment, and Recreation;
- Accommodation and Foodservices;
- Other Services (except Public Administration); and
- Public Administration.

NAICS accounts both for new types of business activity and for older types of activity carried on in new ways. Also, whereas the SIC rested upon a mixture of production-based and market-based categories to classify economic activity, NAICS surpasses this mixed mode of classification by a consistent use of production-oriented concepts.

Level of Geographic Detail

Each establishment on which the Economic Census collects data is assigned a detailed geographic code. This code makes it possible for the establishment to be classified at one or more geographic levels:

- Nation;
- State;
- Metropolitan area;
- County;
- City or place; and
- Zip code.

The combination of establishment data, by industry, by geographic location is key to the claim that establishment level data serve as the building blocks for statistical information. (See Figure 1.)

- Comprehensive coverage of most of the economy;
- Consistent and basic input and output, or production data across the economy;
- Data for detailed industry classifications;
- Data for small geographic areas;
- Great flexibility in how the data can be aggregated and used; and
- Another data point each five years that is consistent with an already long series of data.¹

Note: 1. The introduction of NAICS will bring about a break in time series data in the short run. In early 2000, the Census Bureau will publish a detailed report, *Bridge Between NAICS and SIC*, covering all industries at the national level. *Bridge Between NAICS and SIC* will present new data cross tabulated by both old and new classification systems at the same time, identifying the lowest common denominators between the two systems—SIC and NAICS. These tables will help alleviate problems for data users when dealing with the time series break in the data. For more information on bridge tables, see Paul T. Zeisset, “Disseminating Economic Census Data,” *Government Information Quarterly*, 15 (1998):305–320.

Figure 1
Advantages of Statistical Building Blocks

PRIMARY PURPOSES AND USES OF ECONOMIC CENSUS DATA

Only the failures of human imagination limit the uses of data from the Economic Census. Because these data measure the structure of activity of a large portion of the economy on a consistent and scheduled basis—and because they are so widely available³—they constitute a major body of facts and information that are used at all levels of government and in the private sector. This section describes the primary and most frequent public and private sector uses of Economic Census data, which are to:

- Serve as framework and as statistical benchmark for current economic surveys;
- Provide source data for calculating composite measures of the national economy;
- Plan and monitor economic policies and programs in the public sector;
- Plan and manage in the private sector; and
- Measure and track changes in economic activity.

Framework and Statistical Benchmark for Current Economic Surveys

It is important to understand the basic role of the Economic Census as *benchmark statistics for the nation's economic indicators*. It might be thought that the results are not timely and, therefore, are of little value. But timeliness is not the primary purpose of the Economic Census. The results are never truly timely since they are taken at five-year intervals; must be taken in the year after the period covered; and require two to three years to conduct, analyze, and publish.

Timeliness, on the other hand, is the primary objective of the current surveys, which usually are based on relatively small samples of establishments or companies in the target sec-

tor or industries. But because of their small size, the sample surveys provide only minimal detail—certainly by contrast to the extensive detail provided by the the Economic Census.

Current surveys are taken at frequent intervals in order to update the levels and trends of economic activity between the comprehensive censuses: surveys can be annual, quarterly, or monthly. There are annual surveys of manufacturing, retail trade, wholesale trade, and services, and there also are important monthly surveys for manufacturing, construction, and retail and wholesale trade.⁴

The Economic Census provides the best available and most complete list of business establishments that forms the universe from which the sample panels for these surveys are drawn. Being able to draw a sample from a list—known as the Standard Statistical Establishment List—that is completely updated every five years helps assure the accuracy of these sample surveys.⁵ With the rapid changes taking place in the economy, if the development of new lists were any less frequent, there would be serious problems in the accuracy of the *current measures* of economic activity.

Many of the current sample surveys also are benchmarked to (i.e., reconciled with) the Economic Census.⁶ *Statistical benchmarks* are firm and reliable reference points from which an economy can measure both the volume and direction of its change over time. Since the complete coverage in the census provides more accurate data than the surveys (which are subject to sampling error), the benchmarking process improves the sample estimates. In a similar way, some trade associations benchmark—to the Economic Census—the data they collect. Statistics collected in the Economic Census thus form the cornerstone for the collection and adjustment of statistics gathered between the censuses.

Source Data for Calculating Composite Measures of the Nation's Economic Activity

Some of the best known economic statistics series are those that provide *current composite measures* of economic levels and trends. These include quarterly estimates of Gross Domestic Product (GDP) and nonfarm productivity, and monthly series such as the Index of Industrial Production and the Producer Price Index. Data provided by the Economic Census are critical in maintaining the accuracy of these series.

Benchmarking the National Income and Product Accounts (NIPA)—including the level of GDP and all its components—to data from the Economic Census is an extremely involved process, and is carried out by the Bureau of Economic Analysis (BEA).⁷ Since no other data provide the detail and accuracy of the Economic Census, the GDP estimates—as benchmarked to the Economic Census—are the most complete and accurate possible.

The first step in this process is to use source data from the Economic Census as well as from many other sources to prepare an intricate economic picture of the production and use of commodities and services among industries. The BEA develops this picture, known as input-output tables, by tracing how *each* of the economy's industries use the products of *all* industries in producing final products and services for consumption or investment by other industries. This requires the highly detailed product and material data collected in the Economic Census—as well as information on sales by class of customer which is collected in every *other* Economic Census, or once every 10 years. These tables are useful for analyzing how changes in demand for consumer and investment goods, government expendi-

tures, exports, and imports affect *all* industries. These updated input-output tables then are used to derive benchmark estimates of the NIPA.

The Bureau of Labor Statistics (BLS) and the BEA also use data from the census to update the weights assigned to various products in important price series. The BLS uses data—from the census questions on manufactures—on the quantity of products shipped. This is to determine how much weight to assign to the price of each of several thousand products included in the Producer Price Index. The purpose of this calculation is to summarize these data into more aggregate index numbers.

In a similar manner, BEA relies upon census data for its price series maintained for deflating GDP estimates. Updated weights from the census⁸ help maintain the accuracy of price series by reflecting the current mix of products being produced. Accuracy of price series is, in turn, vital for accurate estimates of real economic activity, that is, estimates adjusted to reflect changes in prices.

Two other major ways that census data are used as the foundation for current composite measures of economic activity are for benchmarking and weighting the monthly Index of Industrial Production by the Federal Reserve Board, and the quarterly estimates of nonfarm productivity by BLS. Periodic updating of weights for these series is required because of the changing mix of industries over a five-year period. As this mix changes, the levels of these series can be corrected only by benchmarking to the Economic Census.

Providing this foundation for the composite economic measures is one of the more important uses of Economic Census data. Many decisions—on the content and scope of coverage of the census—are made based on how that decision will affect the data's use in composite measures. Having accurate composite measures is critical for the development of informed public economic policies and for private decision making. All investors, consumers, wage earners, and producers are affected by the accuracy of current composite measures, and by the contribution of these measures to the reduction of uncertainties surrounding decision making.

Planning and Monitoring of Economic Policies and Programs by the Public Sector

Many economic policies and programs require yet more detailed information than that available from composite measures of the national economy. Frequently, the greater detail required includes economic levels and trends by small geographic area; sometimes, it is by industry or product. The Economic Census serves these needs very well.

A common use is for planning or monitoring economic development programs for a local area. Or, the data may be used to assess the geographic distribution of economic activity, or for changes in that distribution to determine the need for regional economic assistance programs. Another important use is to develop plans and programs for the nation in the event of an emergency. Others want to evaluate the performance of programs to encourage the development of minority-owned businesses or small businesses.

These are examples of policies and programs that are common to all levels of government. State and local bodies make frequent use of the data by small geographic area. The census gives them a rich source of data for decisions on how to provide efficient services and plan for economic growth.

These same users in all levels of government rely on the less detailed data from annual, and more frequent, surveys for analysis of economic policies and programs. Since the accuracy of these more current data is vital for these uses, the Economic Census also is critical in this indirect way.

Planning and Management by Private Sector Businesses

While the public sector uses of census data already described also are important, *per se*, to private sector business managers, there are even more specific and direct ways in which the private sector can use Economic Census data. Moreover, it is important to recognize that many of the suppliers of the data (manufacturer, retailer, or service establishment) also are among the primary users of the results.

The basic Economic Census data supplied by the Bureau of the Census typically is used as a *starting point* by business organizations to arrive at the answers to specific questions.⁹ The individual industrial and business units are far better able to perform their functions within the total economy when basic knowledge is provided to them. And, the more knowledgeable they are about how census data can benefit them, the more likely they are to participate in the census—and to respond accurately and quickly. Therefore, a major task facing any statistical agency is to educate the data suppliers on the ways that the data can be used to their advantage.¹⁰

In 1954, a seminal report on the importance of the Economic Census—*Appraisal of Census Programs, Report of the Intensive Review Committee of the Secretary of Commerce*—confirmed this very point. Namely, “if a business has a better basis from which to initiate its own research, and can—as a consequence—effect economies and efficiencies which result in lower prices to the public, then the public (if it were to know this chain of events) would evidence a real interest and exert a real pressure on behalf of the Economic Census.”¹¹ To promote awareness of the direct benefits to be realized from census results—by showing how the data can be applied to improve both production and marketing decisions, as well as strategy—at this juncture, some examples are useful.

Improving Production Strategy

Census data can be used by individual firms in planning and developing their production strategy. In many cases, this strategy depends upon assessing the performance of the firm against other firms in the same industry or geographic area. By comparing itself with those in the same general category, that is, in the same industry, same geographic area, same relative size class, or those firms specializing in the same types of products, the firm compares its own performance to that of the industry as a whole (see Figures 2 and 3).

By comparing changes from year to year (for products, industries, or geographic areas) with changes that have taken place in the firm itself, the company can determine whether it is improving its performance relative to the rest of the industry. If its performance is unduly different, the firm can investigate the possible causes. For example, based upon analysis of the data, the firm might more efficiently control manufacturing schedules, thus providing for proper inventory levels without overloading.

Other comparisons, useful in production planning, can be made from Economic Census data. For example, manufacturing sector data break down the value of industry shipments according to the primary and secondary products that are typically produced in the indus-

Using the latest Economic Census data on manufactures, or from the Annual Survey of Manufactures series, the firm can compare its performance to certain industry averages in terms of the mix of specific materials consumed or the mix of labor and materials' costs. If its mix is noticeably different, and the firm has been losing its market share, it may want to investigate why. Averages or ratios that may be used for comparison include the following:

- Payroll per dollar of sales;
- Cost of materials per dollar of shipments;
- Annual wages per production worker;
- Production worker wages per hour;
- Nonproduction workers to production workers;
- Capital expenditure per employee or per dollar sales; and
- Unit value (value/quantity) for individual products.

Figure 2
"How To Succeed in Business"

The various measures that could be considered for judging the performance of the individual operating unit can be extended to as many data items as are collected. Census reports provide many ratios for each industry over a number of years in order to make firm/industry comparisons easy. Some basic questions that can be answered with the data are:

- What is the changing mix of manufacturing industries, and which are growing or declining most rapidly?
- Are multi establishment companies becoming more vertically integrated or horizontally diversified?
- Are small firms increasing their share of road building activity?
- What changes are occurring in manufacturing employment in the Cleveland metropolitan area?
- Is employment growing in some primary metals industries and declining in others?
- How does the change in manufacturing activity in North Carolina compare with other southeastern states?
- How has the mix of labor and material costs changed in the past 15 years for the manufacturers of dairy products?

Figure 3
Judging Relative Performance

try. Some of this industry product mix evolves naturally as a by-product of the manufacturing process. Secondary production may be a logical extension of using some of the waste from an earlier stage of production.

In other cases, secondary products have evolved because individual firms have found it advantageous to produce commodities that can be marketed together with their primary product. The individual firm can examine how its product mix compares with other firms in the industry and, thus, determine whether there might be a more effective product mix.

Improving Marketing Strategy

Census data also permit the individual firm to evaluate its position in a market or to determine the existence of a potential market.

Data users in manufacturing industries can determine the answers to such inquiries as “How specialized is the wood furniture industry?” If this information is too aggregated, individual firms frequently request that the Census Bureau provide *special tabulations* of individual products produced or individual materials consumed by manufacturing establishments according to geographic areas that fit their marketing or sales district, that is, “How specialized is the bedroom furniture manufacturing industry *in North Carolina?*” (see Figure 4).

If the company produces a product that is used in other manufacturing processes, it can determine the industries that are most likely to use its product, and—by studying the geographic location of those industries—identify the most fruitful marketing areas. For example, “What are some of the products in which aluminum is being used more? What materials is it replacing?”

Similarly, if a firm produces team athletic equipment, it can ask, “What areas have the highest concentration of construction spending on schools?” (see Figure 5).

Finally, if the firm is producing a product that is used by, or distributed through, other economic sectors (such as retailing, wholesaling, or construction), the firm can use data from the Economic Census covering those sectors to identify the best potential markets among these types of businesses. Similarly, a firm can use this information to lay out sales territories and to pinpoint markets for advertising purposes.

Data users in the distributive trades and service industries might ask some basic questions such as:

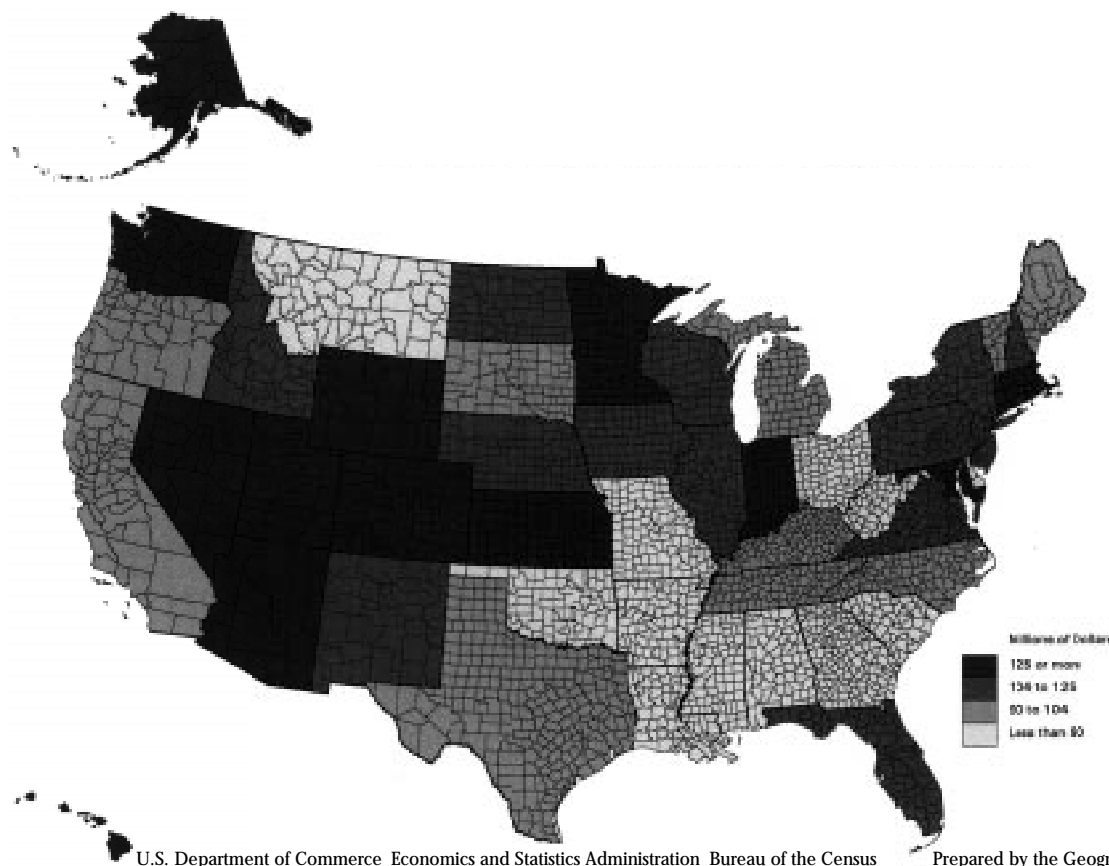
- Are department stores accounting for a smaller or larger share of total clothing sales?
- What areas have the highest concentration of retail sales per capita (see Figure 6)?
- Which states have the biggest increases in business services activity? Has the ranking of states by level of business services receipts changed in the past 10 years?
- Do minority-owned businesses account for a larger share of economic activity than they did 10 years ago? In which types of economic activity are minority-owned businesses increasing their shares most rapidly? In which states are Hispanic-owned businesses increasing most rapidly?

Many organizations making these kinds of analyses have seen the possibility of having the Census Bureau further tabulate the data.

Quite frequently, they request that the Census Bureau regroup establishment data, product data, or materials consumed data into geographic or other groupings that better fit their individual needs.

Such tabulations are done when organizations making the request can pay the cost, provided that the results will not disclose the operation of individual companies.

Figure 4
Special Tabulations Are Helpful



U.S. Department of Commerce Economics and Statistics Administration Bureau of the Census Prepared by the Geography Division

Figure 5
Construction Spending on Educational Facilities Per Capita, by State: 1992

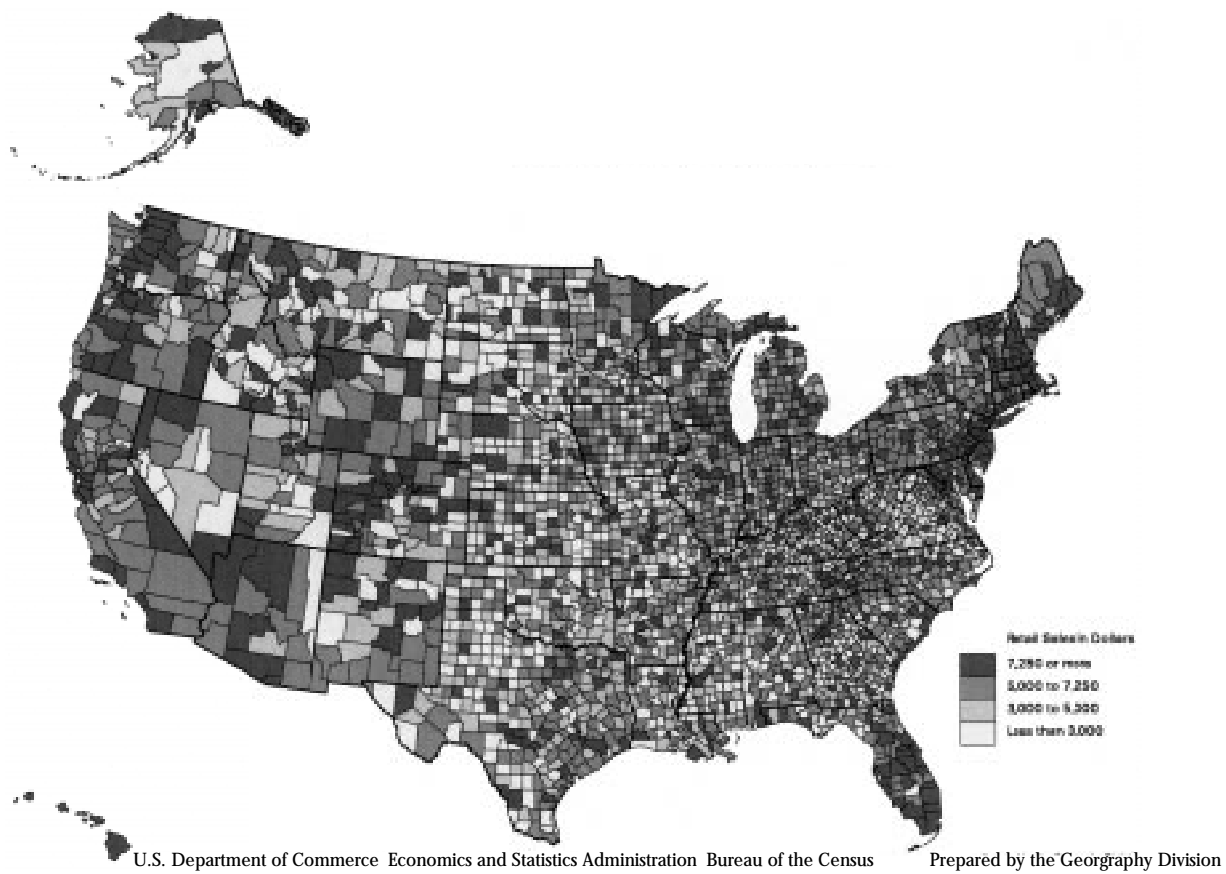


Figure 6
Retail Sales Per Capita, by County: 1992

Some individual firms look to their trade associations or private research firms for the summary data needed for such internal analysis. While these organizations are excellent sources of key figures about an industry's performance, frequently the firm is unaware of the original source of many of these data. Trade associations republish Census Bureau data, at times modifying the data to meet the needs of a particular industry.

Not infrequently, the associations or research firms benchmark their own data series to the Census data or have special tabulations of the data made by the Census Bureau. Sometimes, a failure to acknowledge the Census Bureau as the source of the data occurs because there is no legal requirement to cite data that are in the public domain. At other times, they are meticulous in citing the sources of information, but the harried business user overlooks these footnotes.

Figure 7
Census-Originated Data Marketed by Private Research Firms

- Are food store receipts higher in Waterloo or in Cedar Rapids, Iowa? Were receipts the same in 1987?

In sum, planning and management by private sector business rests—however knowingly or unknowingly (see Figure 7)—upon data from the Economic Census.

Assess and Promote Economic Health

Providing the source data for the national economic accounts and for input into legislation, development planning, programs and public policy decisions; special industry or area reports by magazines, trade associations, local development agencies, and the like.

Gauge the Competition. Calculate Market Share.

Measuring market potentials geographically, according to kind and size of business and market share; and by number, size, and type of prospective buyer.

Design Sales Territories and Set Sales Quotas.

Allocating outlets, salespersons, advertising expenditures, etc. to markets.

Determining routing schedules for salespeople, individual sales agents' territories and quotas, and expense budgets.

Site Location.

Determining the location of new stores, shopping centers, warehouses, and manufacturing plants; or, conversely, examining which locations to vacate.

Locate Business Markets, Distributors, or Resellers.

Determining and measuring new trends in distributions, thereby assisting in the location of warehouses to permit efficient flow of merchandise from manufacturer through retailer to consumer.

Evaluate and Enhance New Business Opportunities. Perform Research.

Providing data needed in planning marketing surveys.

Figure 8
Uses of Economic Census Data

Measuring and Tracking Changes in Economic Activity

The comprehensive and detailed data from the Economic Census are thus employed by all types of public and private sector users to address myriad questions about changes in economic activity (see Figure 8).

Because these building blocks of data can be put together in so many ways, they are highly valuable for such analytical activities as charting long-term trends in the economy; identifying what industries and businesses exist, their relative importance, and their geographic location; and measuring what kinds of material they consume, how much labor they employ, and how much capital they require.¹²

CONCLUSION

The comprehensive Economic Census—conducted by the Bureau of the Census at five-year intervals—forms the foundation of the nation's economic statistics programs. The need for the benchmark statistics only the census can provide is greater today than ever before, and promises to grow in intensity. This census plays a critical role in allowing millions of private and public decision-makers to make more informed economic plans and policies.

Unequivocally, the detailed and comprehensive data collections and disseminations should continue to be performed every five years. The Economic Census—to an extent that no sample survey could ever approach—is the premier vehicle for measuring the increasingly rapid changes taking place on the economic horizon.

And—through the introduction of NAICS—coverage of the service and information sectors will make the 1997 and all succeeding Economic Censuses even *more* indispensable as we move into the twenty-first century.

NOTES AND REFERENCES

1. It should here be mentioned, however, that very small companies do not file Census reports, a decision made by the Census Bureau to avoid imposing undue paperwork burdens on companies below a certain size. For 1997, reports will be required from about five million establishments of larger companies; 15 million establishments, associated with smaller companies, will not be required to report.
2. For a description of the North American Industry Classification System, see Carole A. Ambler & James E. Kristoff, "Introducing the North American Industry Classification System," *Government Information Quarterly*, 15 (1998):263–273.
3. For the ways in which both the range and availability of data products have been improved since the last Economic Census, see Paul T. Zeisset, "Disseminating Economic Census Data," *Government Information Quarterly*, 15 (1998):305–320.
4. All of the Census Bureau's survey results are available on the U.S. Census Bureau's World Wide Web site: <www.census.gov>. More specifically, the Bureau maintains a site for the 1997 Economic Census: <www.census.gov/econ97>. This site leads to further information: NAICS; Economic Census questionnaires; key dates; latest results; and a compilation of data for the latest principal economic indicators available from the Census Bureau.
5. See Shirin A. Ahmed, Lawrence A. Blum, & Mark E. Wallace, "Conducting the Economic Census," *Government Information Quarterly*, 15 (1998):275–304, for a complete description of the SSEL. Although the SSEL is completely revised during an Economic Census, this database is, nevertheless, compiled and

updated on a continuing basis by the U.S. Census Bureau in the intervening years. It contains basic economic data on U.S. businesses.

6. In the benchmarking process, sample survey estimates for the census year are revised to agree with the totals enumerated in the census. Survey estimates for subsequent periods similarly are adjusted in line with the benchmark period.
7. See Judy M. Dodds, "Determining Economic Census Content," *Government Information Quarterly*, 15 (1998):247–262, for a discussion of the important relationship between the BEA and the Census Bureau with respect to the content and use of Economic Census data.
8. Producer Price Index weights are revised when data from the quinquennial industrial censuses, as well as sufficient budgetary resources, become available. The weights represent the total net selling value of commodities produced, processed, or imported in this country and flowing into primary markets. Each census provides the latest comprehensive data on the net selling value for most of the commodities produced or processed.
9. There are virtually endless possibilities, not only for direct use of census data, but for deriving answers to business questions through *calculating ratios or relationships* between census numbers and other statistical measures. Examples of such *indirect uses* of Economic Census data are:
 - To estimate current sales, capital expenditures, or other measures available from the Census for a specific industry, product, or geographic area. Estimates of change (since the census benchmark year) can be applied to the census figures. These estimates of change may be based on current surveys, trade association statistics, a company's own operation or study, or whatever measure has been determined to be appropriate. Frequently, the appropriateness of the estimate of change that has been selected can be tested by applying comparable estimates for earlier periods to data for earlier census years, then comparing the results with the latest census enumeration.
 - Current estimates frequently are derived by simply extrapolating long-term trends. These estimates usually are modified by the use of current data that show the extent of deviation from such long-term trends. Or the more sophisticated user may apply complex correlation or regression statistical techniques to arrive at current estimates. In either case, the long-term trend data series is the starting point.
 - The use of ratios or averages (described earlier) is, perhaps, the most versatile of the ways the Census data can be used indirectly. Ratios tend to be much more stable over time than the actual data values. And this stability, or the trend in the change in the ratio, can be tested by computing comparable ratios over successive censuses. By using such ratios together with current estimates for one of the ratio's components, current estimates for the other component are derived easily. For example, it may be determined that materials costs represented 45 percent of the value of shipments for a particular industry in the most recent Economic Census. The ratio of .45 may be applied to projected shipments for a future period to provide a crude estimate of materials costs for that period. Similar estimating techniques are used routinely in all types of planning. But their application to census data frequently is overlooked.
10. The "educational" relationship is reciprocal: Dodds, "Determining Economic Census Content," elaborates upon the role of many categories of data users (federal agencies, trade associations, accounting organizations, the business community, and others) in conveying to the Census Bureau which questions on the census forms would provide the most useful data.
11. *Appraisal of Census Programs, Report of the Intensive Review Committee to the Secretary of Commerce, Committee on the Bureau of the Census*, February 1954. This report is generally referred to as "The Watkins Commission Report," after Dr. Ralph J. Watkins who was appointed to form the Committee. A fuller treatment of this historical report is contained in the U.S. Census Bureau's *The Economic Census—Two Moments of Truth: 1954 and 1997*, September 1997. This brochure, dedicated to Shirley Kallek, Census Bureau Associate Director for Economic Fields (1974–1983), shows parallels between the 1954 and 1997 Economic Censuses.
12. Illustrative uses of Economic Census data, by large and small businesses, and by local, state, and federal government agencies are as follows:
 - *Gauge the Competition*: A manufacturer compared statistics for his company with industry-wide figures in census reports. He became concerned when he found that they achieved less value added per employee than the competition—represented by industry averages. Census figures helped him to convince the com-

pany's Board of Directors to reduce administrative staff and take other measures to increase productivity and profitability.

- *Calculate Market Share:* A restaurant supply wholesaler calculated that it had roughly an 11% market share (its own sales divided by state totals for similar businesses) in its primary sales region in the northern mountain states. The wholesaler used that figure as a target when it expanded into Arizona and New Mexico.
- *Design Sales Territories and Set Sales Quotas:* An insurance company uses counts of establishments and sales by kind of business to redesign sales territories and set quotas and incentive levels for agents. By comparing census figures to its own records on customers, company executives found which kinds of businesses were better prospects than others.
- *Site Location:* A major food store chain uses retail census data and population figures to estimate potential weekly food store sales in the trade area for each of its stores. These estimates allowed the company to calculate market share for each existing store, and to evaluate prospective sites for new stores.
- *Locate Business Markets:* A man who had developed software for managing quality control operations made a list of industries most likely to use his product, then ranked the top industries based on census figures on value added and growth. He customized his software to appeal to those top prospects. Census data on CD-ROM made it easy to find areas where large plants in the target industries were located.
- *Locate Distributors or Resellers:* The publisher of a TV magazine for free distribution at stores wanted the distribution of retailers by ZIP Code in order to design sales territories. ZIP Code data are grouped by employment size ranges, so that data users can distinguish small, medium, and large businesses. The publisher's sales agents had found that owners of small stores were more willing to listen to their pitch than were owners of large stores. Therefore, the publisher was able to group ZIP Codes until each agent's sales territory had roughly the same number of small stores. This arrangement helped equalize the chance of each agent to make a successful pitch to those most willing to listen.
- *Evaluate New Business Opportunities:* A manufacturer of industrial chemicals used data on production of semiconductors and other high technology products to assess the feasibility of introducing a line of advanced composite materials.
- *Enhance Business-opportunity Presentations to Banks or Venture Capitalists:* An entrepreneur used census data to support her loan application, as she sought financing to start a tailoring and alterations shop for women executives. She used data from the Census of Service Industries on her line of business, in conjunction with data on women in managerial occupations from the Census of Population, in order to persuade lending agents at the bank that there were (1) sufficient women who needed her service, and (2) few enough other (competing) alterations shops—so that the chances that her business would be successful were high enough to justify their loan risk.
- *Research:* A professor at Harvard University studied a series of votes in Congress related to free trade issues. He used Census of Manufactures data to explore the correlation between each state's industrial structure and the way that the state's congressional representatives voted on these issues.
- *Assist Local Businesses:* A state economic development agency identified industries with the most export activity using "Exports from Manufacturing Plants." The agency gave those industries top priority as it launched a program to assist companies in finding trade leads.
- *Public Policy and Statistics:* Federal, state, and local agencies look to Economic Census data to gauge the effectiveness of programs such as minority contracting guidelines, trade policies, and job retraining. The Federal Emergency Management Agency uses the ZIP Code CD-ROM to inventory manufacturing locations by industry and size. They estimate potential losses to productive capacity that might result from a major flood or other disaster. Some of the broader questions listed above also can be answered with data from annual, or more frequent, sample surveys. The ability to measure and track trends in economic activity with these more current surveys is, however, inescapably dependent upon the Economic Census which provides the framework and context for the current surveys.