

Performance Principles for Census Bureau Activities

1. The development of concepts and methods.

The demographic and economic data and information that the Census Bureau produces are critical to understanding the social and economic well-being of the U.S. population and its economy. The Census Bureau ensures the utility of these data and its analytic reports by establishing standards for concepts for collecting and reporting such data and information, and by using established statistical methods or developing and vetting new methodologies to meet the policy and program needs of its sponsors, including the needs of federal legislation. To identify and meet those needs, the Census Bureau works closely with users of its data and information in the executive and legislative branches, advisory committees, sponsors of its reimbursable surveys (typically but not exclusively other executive branch agencies), the National Academy of Science, and interested nongovernmental individuals and groups such as academics, nonprofit organizations, and businesses. Our goal is to provide easily accessible relevant, timely, and accurate data to our data users.

The data content of some of our key programs is driven directly by federal legislation. For example, the Constitution mandates the taking of a census every ten years to reapportion the House of Representatives. Over the years, additional questions have been added to the census to meet other needs of Congress and federal agencies carrying out the laws. Title 13 U.S.C. directs how the decennial census shall be taken, states the procedures for consultation with the Congress, and grants authority for the economic census of business that is taken every five years.

Other surveys taken by the Census Bureau serve as the basis for official statistics, used to monitor economic health and social well-being, and to allocate federal funds. For example, the Current Population Survey is used to report the Nation's monthly unemployment rate, and annually its poverty rate. Data collected on foreign trade lead directly into monthly reports on the balance of trade. Other economic surveys generate data that become an integral part of the Nation's measure of Gross Domestic Product. In addition, statistical methods are used to estimate the population size for geographic entities, and some of its characteristics. The Census Bureau also maintains constant contact with a broad spectrum of data users to ensure that its data, estimates, and information remain relevant and accurate.

Concepts are theoretical constructs that form the underpinnings for theories of human social and economic behaviors and activities that are of analytical interest to data users. Definitions describe attributes and characteristics of a particular concept in specific terms, as well as specify variables to facilitate its measurement. It is important that the definitions of the specific variables required for the measurement of concepts be unambiguous and be clearly specified in the context of the analytical purposes for which the data are to be collected. Measurement occurs by way of the survey process, which consists of statistically defensible methodologies for collecting,

processing, summarizing and disseminating data. Specifically:

- The Census Bureau will regularly consult with data providers (respondents), data users and survey sponsors to ensure the relevance and appropriateness of collected data and public information, as well as to keep abreast of changes in data needs and to identify outdated concepts.

The Census Bureau consults regularly with Quarterly Services Survey (QSS) respondents and data users. For example, the Bureau:

convened an interagency group of principal data users with representatives from the Bureau of Labor Statistics (BLS), Bureau of Economic Analysis (BEA), Federal Reserve Board (FRB), Council of Economic Advisors (CEA) and Economic Statistics Administration (ESA) of the Department of Commerce to assist in developing survey content and coverage.

conducted 75 cognitive interviews with respondents to ascertain the respondents' ability to report the requested data items and to navigate the paper and electronic reporting instruments.

consulted with other data users with specific industry concerns such as the Centers for Medicare and Medicaid Services (CMS) and the Medicare Payment Advisory Commission (MEDPAC) on health care issues.

holds quarterly meetings with BEA to discuss current service data needs and issues specifically related to the development of short term economic statistics for the services industries.

- Concepts and definitions will be clearly stated and related to their intended use. They will be fully described and carefully documented in all data products. These will also be made available on request to data providers.

The survey concepts and definitions are stated clearly on data products and survey questionnaires and are available online at <http://www.census.gov/qss>. Among other things, the QSS website includes survey definitions. The Census Bureau tailors survey questionnaires to provide industry and even company-specific instructions to clarify reporting instructions.

- Whenever possible, and when they exist, standard definitions, classification systems, and methods will be used. Examples of these are the North American Industry Classification System, the Standard Occupational Classification System, the Office of Management and Budget standards for defining race, ethnicity, and poverty, Metropolitan and Micropolitan Statistical Areas, and the Federal Committee on Statistical Methodology guidelines for reporting nonresponse rates.

The QSS uses standard definitions, classification systems, and methods. The survey is designed to produce estimates based on the North American Industry Classification System (NAICS). The language used in the questionnaire has already been used in the Economic Census and the Service Annual Survey (SAS) or has been verified as conforming to industry usage during cognitive testing of the questionnaire. Indicators of nonresponse are published as imputation rates in each release.

- Standard reporting units will be used. These include, but are not limited to, the household, the family, or the individual for demographic variables; the government, the establishment, the enterprise or company, the legal entity, or a logical subset of these for economic variables.

The QSS uses reporting units similar to those used in other economic surveys conducted by the Census Bureau. The units are based on companies and Employer Identification Numbers (EINs), which represent clusters of one or more establishments owned or controlled by the same company. For a large, multi-establishment sampling unit, reporting units may be created based on characteristics of the unit, such as its component service industries and geographic locations. Most of the reporting units in the QSS are the same as those in the SAS.

- The Census Bureau will be responsive to the environment, record-keeping practices, and confidentiality concerns of data suppliers (including respondents and administrative records sources), when developing concepts, definitions, and methods for the data it collects. It will actively seek ways to minimize respondent burden, facilitate reporting, and maintain the confidentiality of respondent data.

Extensive consultation and cognitive testing with prospective respondents including chief financial officers, accountants, tax managers, and vice presidents were conducted between June and August 2003 to verify that the concepts and data collection methods were consistent with industry practices. Data are collected under authority of Title 13 of the U.S. Code which mandates that the reported data is confidential and will only be seen by persons sworn to uphold the confidentiality of the Census Bureau information. Burden reduction is accomplished through the sample design, data collection methods, flexible reporting arrangements, allowance of estimated figures, and the use of imputation for smaller reporting units.

- Data collection and statistical methods will be fully described, statistically defensible and appropriate for the intended survey purpose. When considering alternative methods, attention will be given to balancing costs, the desired levels of precision, staff resources, and respondent burden. New methods should be thoroughly tested before being implemented.

Descriptions of data collection and statistical methods are available on the Internet at <http://www.census.gov/qss>. The methods used in conducting the QSS are similar to those the Census Bureau has successfully used to conduct many other economic surveys. In choosing

these methods we were able to leverage existing infrastructure and expertise to minimize the overall cost while meeting survey requirements. Electronic reporting was offered as a means to improve the quality and timeliness of reporting and to minimize burden to the respondent. Prior to its introduction, electronic reporting was subjected to both cognitive and usability testing.

2. The planning and design of surveys and other means of collecting data.

The Census Bureau's commitment to quality and professional standards of practice includes the use of modern statistical theory and practice in all technical work. In the area of planning and design, the Census Bureau assumes responsibility for determining sources of data and measurement methods. In so doing, the Census Bureau seeks advice on specific data concepts, methods, and products from data users and from other professional and technical subject-matter and methodological experts. Specifically:

- A statement of objective will clearly state the purposes for which information is required, the major variables of interest, the tabulation plans, the design of other products, the quality expected, budget constraints, and expected delivery dates.

Such a statement was published on page 43080 of the Federal Register on July 21, 2003. This page can be accessed online by following this link <http://www.gpoaccess.gov/fr/retrieve.html> and searching Volume 68 of the Federal Register for page 43080.

- Planning will take into account the needs of all areas affected by the data collection effort, including those involved in the design, collection, processing, estimation, and dissemination, as well as any sponsors and users of the data. Overall survey requirements will be documented, budget and schedule details refined, and available resources identified and assigned to the project.

The Census Bureau convened an interagency group of principal data users with representatives from BLS, BEA, FRB, CEA and the ESA to assist in developing survey content and coverage. All aspects of conducting the QSS were developed using resources from methodology, programming, subject matter, and data collection areas within the Census Bureau. We used project management tools to develop requirements, determine staffing needs, and schedule the development process. We mailed the first survey at the end of March 2004 and began releasing data in September 2004. At that time, we released estimates for the fourth quarter 2003 and the first two quarters of 2004. This release schedule enabled us to “prove in” concepts and stabilize processing before disseminating data to the public. We will release estimates no later than 75 days after the end of the quarter.

- The survey frames will conform with the target population. Frame creation, use and maintenance will include methods to reduce undercoverage or overcoverage.

The QSS sample is selected from the larger Services Annual Survey sample for the industries of interest. The sample includes units of all sizes and is updated on a quarterly basis to account for new service businesses, deaths, and other changes in the target population.

- Established sampling methods will be used to select a representative sample of the population of interest. Conclusions and inferences about the population will be based on examination of information collected from this representative sample.

The QSS sampling frame is stratified by industry and size and a systematic, probability proportional-to-size sampling method is used to select units for the survey. Statistics are calculated to verify that the selected sample is statistically representative of the sampling frame. Estimates are calculated using accepted statistical methods applied to the data collected. More information can be found in the Reliability of Estimates link from <http://www.census.gov/qss>.

- The survey sample design requirements will be developed to meet the sample size and survey estimate reliability requirements given the survey's cost, timing, and scope constraints.

The QSS sample design requirements were developed to reliably estimate revenue for industries in NAICS Sectors 51, 54, 56, 622 and 623 using an overall sample of approximately 5000 units. The sample size was based on consideration of the survey funding, periodicity, and scope. Note that data collection for sectors 622 and 623 will begin in early 2005.

- The design of data collection modes and instruments will take into account the statistical requirements of data users and the data processing requirements to ensure the utility of the results.

The questionnaire content and industry coverage were developed based on the Census Bureau's interagency meetings with BEA, BLS, FRB, CEA and ESA. The content was tested with potential respondents to determine burden to the respondent. Timely, reliable data on revenue is essential for estimating and evaluating current trends in the service industries. For example, the QSS will provide timely data on the services industries that will allow the BEA to make significant improvements in the national accounts. In the National Income and Product Accounts (NIPA), the quarterly data will allow more accurate estimates of both Personal Consumption Expenditures (PCE) and private fixed investment. Revenue will also be used to produce estimates of gross output by industry that will allow BEA to produce a much earlier version of its gross domestic product by industry estimates.

- Quality assurance methods will be implemented, as needed, to ensure each survey's quality requirements are met.

Quality assurance was implemented to verify frame construction, sample selection, mailout production, data keying, and tabulation. Reliability measures are computed for all published

estimates to monitor and ensure data quality.

3. The collection of data.

The Census Bureau assumes responsibility for determining methods of data collection, while minimizing respondent burden and ensuring quality, for all Census Bureau operations, regardless of data collection mode, medium, respondent universe, or subject. In so doing, the Census Bureau seeks advice from data users and from other professional and technical subject-matter and methodological experts. Data collection is broadly defined as those activities and processes that obtain statistical data about the elements of a population, either directly through the mechanism of obtaining the needed information by contacting respondents representing the population elements or indirectly by using administrative records or other data sources. Specifically:

- Respondents are a data collection organization's most valuable resource. To assure full and continuing cooperation, the Census Bureau will minimize individual respondent burden and obtain participation by fully informing the respondent regarding the purpose of the data collection and the authority under which it is conducted.

The QSS questionnaire was tested on small, medium, and large sized organizations in several geographic locations to determine burden. We reduce respondent burden by limiting survey content to revenue and class of customer (household, government or business) and allowing several reporting options - mail, fax, Internet, or phone. The questionnaire follows OMB guidelines for informing the respondent that the QSS is a voluntary survey and citing the authority under which it is conducted. A cover letter directs respondents to the QSS website on which information regarding the purpose of the survey is given.

- All data collection instruments, methods, systems, training, tools, and other materials will be validated before use.

We conducted cognitive interviews and usability tests to validate the paper and electronic reporting instruments. Staff conducted training sessions for the telephone follow-up clerks at the Census Bureau's National Processing Center (NPC) in Jeffersonville, Indiana. The clerks were given training notebooks with detailed descriptions on systems and calling techniques. We conducted thorough testing of each collection instrument. Quality assurance measures are documented and conducted for each data collection method.

- Quality and performance measurement and process control systems will be implemented and integrated in the data collection process to assist management and inform the quality of the resulting statistics, facilitating objectivity. These processes, systems, and tools will provide timely measurement and reporting of all critical components of the data collection process, on the dimensions of progress, response, quality, and cost, and enable

managers to identify and resolve problems and assure that data collection is completed successfully. Additionally, these measurements will provide survey designers and data users with indicators of survey performance and resultant data quality.

The QSS data collection process includes measurements of response and quality checks. Some of the measurements of response include daily reports on the number of forms received by statistical period and by source - mail, fax, phone, and Internet. Census staff review these daily reports to track collection progress, to ascertain the utility of follow-up collections, and to determine future staff requirements. Quality checks are conducted at all stages of the collection process from data capture to imaging. Batch files from the Internet and mail check-in systems are stored electronically and the files can be reapplied if necessary. These batch reports include statistics on the number of revenue, rejects, and updated database fields. All rejected forms are researched, corrected, and reloaded to the system. We image all completed mail and fax questionnaires. Consistency checks are made between the number of forms keyed and imaged.

- Reporting unit and item nonresponse will be minimized using appropriate methods.

Delinquent respondents are faxed a follow-up questionnaire approximately five days after the initial due date. About one week after the fax follow-up, delinquent respondents are called to collect data. Large, delinquent companies are called by survey statisticians in Washington, DC.

- The secure handling of collected data will be assured by appropriate means throughout the entire data collection process to preserve confidentiality and privacy and ensure integrity.

The Census Bureau standards for safeguarding and protecting Title 13 and Title 26 data are applied to the QSS. The QSS is also subjected to additional protection because it is an indicator survey. The QSS has a specific group of authorized users approved by the survey managers. Permissions to all directories and files for the QSS are set so that only members of this group have access to the data.

- All components of the data collection process will be comprehensively documented to assure the consistency and repeatability of the process.

The QSS is processed using the Standard Economic Processing System (StEPS) developed by the Census Bureau in the mid 1990's. The general system and the specific QSS parameters are documented including edits, imputation, and estimation. The process has been repeated successfully for the three quarters for which QSS has published estimates. The standard processing system has been used for more than eight years to process many of the Census Bureau's periodic economic surveys.

- Ways will be sought to use technology wisely to reduce respondent burden, improve data quality, process efficiency, and/or timeliness.

The QSS survey offers several reporting options - mail, fax, phone, and Internet to allow respondents flexibility in reporting. The data review includes exploratory data analysis techniques for outlier detection to help assure quality. When possible, staff research company changes on the Internet in lieu of calling the company. In addition, the QSS database uses administrative data from the Census Bureau's Business Register and annual revenue data from the latest SAS.

4. The processing and editing of data.

The Census Bureau's commitment to quality and professional standards of practice includes the goal of processing survey and census data to prepare the data as collected for meaningful consumption by end users. The term "processing" encompasses a variety of activities, including *administrative functions* (such as parameter development and management information systems); *post-collection processes* (such as editing, imputation, data review and correction, data query, weighting, estimation and variance estimation, and application of disclosure avoidance rules); and *support functions for collection technologies* (such as mailout, check-in, data capture, and followup). Of these various processes, editing and imputing data are described by this set of principles, while weighting is described within the Production of Estimates or Projections principles. Specifically:

- Processing systems will be as integrated as possible (that is, output from one processing activity should be useable as input to another).

The QSS is processed via the StEPS which integrates data collection, editing, imputation, analysis, and estimation.

- Editing will clean up the data and reduce inconsistent or illogical entries, resulting in more accurate, cohesive and comprehensive survey data results, and provide the basis for future improvement of the survey vehicle, and provide information about the quality of the survey data.

Consistency edits are used to correct responses to the source-of-revenue items, in which the sum of these percentage items differs within a specified tolerance from 100; these items are treated as reported. Ratio edits are used to identify reported revenue data that are to be reviewed by the survey analysts and prevented from being used to impute missing revenue data. Additional edits are used to identify reporting units for analyst review that have inconsistent revenue and administrative payroll data or an atypical reporting period.

- While inconsistent or invalid entries will be removed from the datasets to maintain the credibility of the issuing agency and to facilitate further automated data processing and analysis, this goal must be balanced against the costs of the process and the potential to bias the data.

Inconsistent and invalid entries are automatically flagged in the edit process and are reviewed by analysts. The analysts prioritize units for possible telephone followup based on those edit failures that might have the largest potential to bias the data. Unusual data which is unable to be verified is replaced by imputed values to prevent substantial bias.

- A data item or series of items that are missing or deemed to be inconsistent or illogical by the editing process may be subjected to imputation processes that substitute valid values for the missing or illogical values.

Missing revenue and source-of-revenue items are imputed. Also, source-of-revenue items that cannot be corrected by the consistency edits may be raked by the processing system so that they sum to 100; these items are treated as imputed.

- Imputation processes will be designed to limit the bias caused by missing or incorrect data.

The imputation of missing revenue and sources-of-revenue is based on data that are correlated with the data being imputed, or reported data from similar reporting units classified in the same industry. The order of imputation methods is based on research that investigated the bias associated with the methods.

- Imputation processes are to be repeatable and objective. This is best accomplished through automation.

Imputation is performed as a part of StEPS. It is well documented, repeatable and objective.

- To preserve the reported data, the minimum number of edit-failing data fields required will be imputed to ensure that the imputed record satisfies the edits.

Reported data are replaced with imputed data by the processing system only for source-of-revenue items that are raked so that they sum to 100.

- The choice of treatment for missing or failed-edit data will depend on the end-use of the data and the level of reporting for a given item or series of items.

Data is imputed or raked at the reporting unit level to allow aggregation to published industry levels.

- Imputation methods will include audit functions that identify the imputation methods used for a particular data item and the source of data used for each imputed value.

For a given item that has been imputed, the processing system stores information on the method used to impute the item, including the source of data used.

5. The analysis of data.

The Census Bureau uses sound analytical techniques to ensure objectivity in its statistical information products. We evaluate the techniques used to analyze data, continually searching for more effective, accurate, and reliable analysis tools. We evaluate and report on the quality of our analyses. Specifically:

- The Census Bureau will perform analyses and present results in a neutral manner.

The Census Bureau does not publish results of any of its own analyses. Survey results are published in a neutral manner to avoid drawing incorrect inferences about the data and all dollar volume and percent estimates are published with a corresponding measure of variability.

- The Census Bureau will ensure that the sampling design is considered and addressed in analyses. Measures of sampling error will be provided.

All review of macrodata is based on data tabulations created using appropriate sampling weights and measures of sampling variability and imputation rates are considered in performing analyses. All dollar volume and percent estimates are published with a corresponding measure of sampling variability. No forecasting or interpretation is performed for the QSS by the Census Bureau.

- Preliminary quality checking and exploratory data analysis techniques will be utilized to identify, where possible, instances of nonsampling error, including missing data, measurement error, processing error, and specification error.

Consistency edits and other quality checks are performed on collected data. The Census Bureau uses exploratory data analysis techniques such as scatter plots, boxplots, transformations, and regression to identify potential outliers, large delinquent companies, and keying errors. We use these tools to compare items across statistical periods and within statistical periods.

- Quality checks will be used to prevent errors in the analysis, including checking the data used in the analysis; checking the computations; and checking the text, tables, and figures used to report the analysis results.

The Census Bureau uses several quality checks to prevent potential errors in text, tables, and figures. The publication tables are generated from the Census Bureau's time series repository. Several programs are run to ensure estimates are populated correctly and to check for additivity of detail estimates to corresponding totals. The tables, text, and figures are reviewed for accuracy by survey analysts, mathematical statisticians, and management.

6. The production of estimates or projections.

Survey estimation involves assigning values to unknown population parameters, using information collected in the survey, and possibly from other sources. A *direct survey estimator* uses data collected on the variable of interest only from the time period of interest and only from sample units in the domain of interest. An *indirect small-area estimator* uses values of the variable of interest from a domain and/or time period other than the domain and time period of interest, and it may also incorporate information from other data sources, such as administrative records. A *seasonal adjustment* of a time series of estimates removes seasonality and calendar effects. A *projection* uses historical data, along with models and/or assumptions, to forecast or extrapolate future values. Specifically:

- When using data from sample-based surveys to calculate *direct survey estimates*, the Census Bureau uses sample weights appropriate for the sample design. Sampling weights may be adjusted to reduce sampling or nonsampling errors. For example, the adjustment of sampling weights to handle nonresponse can reduce nonsampling error; whereas, the adjustment of sampling weights to handle unrepresentative outliers with large sampling weights can reduce sampling error. Auxiliary data and associated population totals will sometimes be used to improve precision and/or reduce nonsampling errors of direct survey estimates.

Quarterly revenue estimates are obtained by summing weighted data (either reported or imputed). The weight for each unit is the product of two factors: the reciprocal of the probability of selecting the unit into the sample and a weight that adjusts the quarterly estimates using SAS estimates of revenue.

- The Census Bureau sometimes produces estimates for geographic areas or subgroups of the population for which direct sample-based estimates would have inadequate statistical reliability, necessitating the development of *indirect small area estimates*. Models used and assumptions made for indirect small area estimates will be clearly documented to ensure objectivity, and appropriate statistical uncertainty measures will be provided where possible.

Not applicable to the QSS.

- The Census Bureau performs *seasonal adjustment* of a time series of estimates only given clear evidence of seasonal behavior and only when the adjustment passes a suitable set of diagnostic tests. Diagnostics will be reviewed on a regular basis.

QSS estimates have not yet been seasonally adjusted because at least four years of estimates are required to detect and adjust for seasonal patterns. When additional estimates become available, we will evaluate whether seasonal adjustment is reasonable. However, with fewer estimates there are fewer diagnostics available to determine the appropriateness of the seasonal adjustment

models. As more estimates are produced, additional diagnostics become available and will be used to determine the most appropriate seasonal adjustment models.

- *Projections* forecast or extrapolate historical data, possibly using information from additional data sources. Models used, associated data sources, and assumptions made for projections will be clearly documented to ensure objectivity. Projections will be updated at suitable intervals based on new data.

Not applicable to the QSS.

7. The establishment of review procedures.

Review involves a focus on ensuring that information is accurate, reliable and unbiased and that information products are presented in an accurate, clear, complete, and unbiased manner. All data products should result from objectivity, which is achieved by using reliable data sources and sound analytical techniques, and preparing information products that use proven methods by qualified people that are carefully reviewed. Specifically:

- All documents released by the Census Bureau will undergo an extensive review that encompasses the content, statistical and survey methodology, and policy implications of the document. The review will ensure that the data and text of the document meet Census Bureau standards for quality.

The QSS publication is reviewed prior to each release to ensure it meets the following Census Bureau standards: Source and Accuracy Statements for Census and Survey Data Tabulations and Model-based Estimates; Minimal Information to Accompany any Report of Survey or Census Data; and Disclosure Review. These standards are available upon request.

- Reviews will ensure that no Title 13 or other legally protected data are disclosed.

The Census Bureau only publishes total estimates at the United States level from the QSS and does not publish or disclose any data that would reveal information about individual companies. Employees receive regular training on the importance of protecting Title 13/Title 26 U.S.C. data and the penalties for disclosing this information. The protected data is only seen by Census Bureau employees sworn to protect the confidentiality of the data. All materials and files containing confidential data are protected and labeled as Title 13/Title 26 Data - disclosure prohibited. All printouts with confidential data contain the same statement and are discarded in “burn bags.”

- Publications will clearly state the important limitations of the data, both those due to sampling, when applicable, and those due to response and other nonsampling errors.

Limitations are described in the “Reliability of Estimates” section of each QSS release. This information is also available on the Internet at <http://www.census.gov/qss>.

- If a potential data product is determined by the Census Bureau as unfit for use because it does not meet Census Bureau requirements for quality, the Census Bureau reserves the right to withhold the data product from release.

The Census Bureau will not publish any estimate in the QSS with high sampling variability or imputation rates or other serious deficiencies.

8. The dissemination of data by published reports, electronic files and other media requested by users.

Dissemination refers to how data are internally and externally disseminated, including informing users of survey and data concepts, data quality, and the statistical and survey methodology used, all of which demonstrate the objectivity of Census Bureau statistical information products.

Specifically:

- Statistical information products disseminated to the public by the Census Bureau must be accompanied with a statement describing their accuracy. Accuracy is the degree of closeness to the targeted value, using statistical measures of error. Data derived from samples will be published with their coefficients of variation. Measures of nonsampling error are provided to the degree they are available.
 - Statistical products must be accompanied by descriptions of or references to descriptions of the methods and procedures used in their development, and other information about the data that may affect its use.

This information is provided in the “Survey Description” and “Reliability of Estimates” sections of each QSS publication.

- The information on methodology provided or referenced will permit users to determine whether the data adequately approximates what they wish to measure, and whether the estimates they wish to use were produced with tolerances acceptable for their intended purpose.

Each quarterly release indicates that descriptions of concepts, questionnaires, and general survey methods are available on the Internet at <http://www.census.gov/qss>. Estimated measures of sampling variability are provided in Table 2 of each quarterly release.

- The documentation provided to users must convey useful information on data quality, and engender an awareness of quality as an issue in the proper use of the

data.

Each quarterly release includes imputation rates and measures of sampling variability. Imputation rates are indicative of the potential influence of nonresponse bias. Sampling variability provides information about the sampling error. Taken together these measures are important indicators of overall survey quality. The “Reliability of Estimates” section provides guidelines on the use of these measures and engenders an awareness of data quality.

- The Census Bureau will provide indicators of the quality of the statistical information it disseminates to the public, along with definitions and descriptions of the concepts and methods.

Each quarterly release includes imputation rates and measures of sampling variability. Imputation rates are indicative of the potential influence of nonresponse bias. Sampling variability provides information about the sampling error. Taken together these measures are important indicators of overall survey quality. Definitions and descriptions of these concepts are provided in the Reliability of Estimates section of the QSS website.

- The level of data to be provided to users on data quality or methodology will depend on the type of data collection, data sources, and analysis; confidentiality protection required by statute; the medium of dissemination; the range and impact of uses of the data; and the total budget of the statistical program.

The measures, descriptions, and interpretation of data quality as well as the documentation of the methodology used for the QSS are consistent with those provided for other economic surveys conducted by the Census Bureau.

- Statistical information products disseminated to the public by the Census Bureau will be produced in a timely manner. Timeliness encompasses frequency of data dissemination, as well as the closeness of the release to the data's reference period. Efforts will be made to collect and publish data in a time interval that allows high quality data to be disseminated to the public and also ensures that the information is useful.

The Census Bureau releases the QSS estimates 75 days after the end of the reference period. This allows the Bureau to collect, edit, and disseminate high quality data and provide timely estimates to the data users. Before the QSS, the only official government service revenue estimates were available from the SAS and the Economic Census.

- Information collected by the Census Bureau will be designed to provide statistical measures that are relevant. Relevance is the degree to which the information products provide useful information for both current needs and anticipated future needs. The Census Bureau will maintain ongoing contact with a broad spectrum of users to ensure that its information will continue to remain relevant.

The Census Bureau convened an Interagency group of principal data users with representatives from the Bureau of Labor Statistics (BLS), Bureau of Economic Analysis (BEA), Federal Reserve Board (FRB), Council of Economic Advisors (CEA) and Economic Statistics Administration (ESA) of the Department of Commerce to assist in developing contact and coverage of the QSS. In addition, QSS staff hold quarterly meetings with BEA to discuss their current service data needs and the planned expansion of the QSS to cover Hospitals, Nursing, and Residential Care in the second year of the survey. Other meetings are also held with data users for specific industries such as health care with the Centers for Medicare and Medicaid Services (CMS).

- Statistical information products will be disseminated to the public by the Census Bureau in a manner that allows them to be accessible to a broad range of data users with different requirements for data availability and understandability. Accessibility is the ease of access or effort needed for customers to acquire statistical data, products or services. The Census Bureau will conduct extensive usability tests to ensure that its statistical products are accessible and understandable to its data users.

The Census Bureau disseminates the QSS data via its website in several formats including excel and PDF. The data is also available electronically on the Commerce Department's STAT-USA website, the Census Bureau's American Factfinder, Census Bureau's economic briefing room, and the White House's economic briefing room. The data are available via mail or fax upon request.

- Census Bureau disclosure protection protocols will be followed.

In accordance with Federal law governing Census Bureau reports, the QSS reports are reviewed to ensure that no data are published that would disclose the operations of an individual establishment or business.

- Statistical information products disseminated to the public by the Census Bureau must be reproducible following prescribed methodology. Reproducibility means that there is the capability to use the documented methods on the same data set to achieve a consistent result. Documentation provided by the Census Bureau must allow results to be repeated. However, data released by the Census Bureau generally will not be directly reproducible by the public because the underlying data sets used to produce them are confidential. In addition, some results may not be easily reproduced by third parties due to the complexity and detail of the methods and data.

Except for analytical review, all steps involved in the production of the QSS publication are automated. All programs used to create estimates published in the QSS are developed from written documentation. Prior to being implemented in production, programs are extensively tested and verified to conform to the documented requirements. Methodology descriptions provided to the public are faithful distillations of this documentation. Data used to produce published estimates are stored electronically. The automation of the processes and the storage of

the data allow all estimates to be reproduced.