

**Supporting Statement**  
**U.S. Department of Commerce**  
**U.S. Census Bureau**  
**Quarterly Services Survey**  
**OMB Control Number 0607-0907**

**B. Collections of Information Employing Statistical Methods**

**1. Universe and Respondent Selection**

**Sampling Frame:** The Quarterly Services Survey (QSS) sampling frame is the Service Annual Survey (SAS) sample and has the same two types of sampling units: Employer Identification Numbers (EINs) and large multiple-establishment firms. Both sampling units represent clusters of one or more establishments owned or controlled by the same firm. The information used to create these sampling units was extracted from data collected as part of the 2007 Economic Census and from establishment records contained on the Census Bureau's Business Register as updated to October 2010. The sample is redrawn approximately every 5 years to redistribute reporting burden and to introduce sampling and processing efficiencies.

**Stratification:** The primary stratification of the QSS frame is by industry, as well as tax status and private/government ownership for some industries based on the detail required for publication. We publish QSS estimates for less detailed industry groupings than for SAS estimates. Therefore, the industry stratification for the QSS sample is broader than the industry stratification used for the SAS sample. There are 208 primary strata for QSS.

Within each industry stratum, we substratify the sampling units by a measure of size related to their annual revenue. A substratum size boundary (or cutoff) is determined, and subsequently used to divide the certainty units from the noncertainty units. We base these cutoffs on a statistical analysis of data extracted from the Census Bureau's Business Register. We also use this analysis to determine the number of size substrata for each industry group and to set sampling rates needed to achieve specified sampling variability objectives on receipts estimates for different industry groups.

**Sample Selection:** We select the QSS sample independently within each size substratum contained in an industry stratum. Sample selection is a two-step process and begins by identifying the firms selected with certainty. If a firm's estimated annual receipts are greater than the corresponding certainty cutoff for the stratum in which that firm exists, that firm is selected into the sample with certainty. This means they are sure to be selected and will represent only themselves (i.e., have a selection probability of one and a sampling weight of one). The selection procedure for the noncertainty portion of the sample follows a

systematic, probability proportional-to-size scheme, where size is defined as the sampling unit's SAS weight. Because the QSS sample is an independently selected subsample, it is possible that we select some units in the SAS sample at a lower sampling rate than desired for the QSS sample. We include such a unit in the QSS sample and assign a sampling weight equal to the unit's SAS sampling weight. The maximum sampling weight for a sampling unit selected for the QSS sample is 750.

Currently, there are approximately 18,000 firms selected for QSS. Of this number, about 4,000 are selected with certainty (probability equal to one), and about 14,000 are smaller firms selected with a probability less than one.

**Sample Maintenance:** Periodically, we update the QSS sample to represent EINs newly assigned or reactivated since the initial sample selection. The new EINs, called births are EINs recently assigned by the Internal Revenue Service (IRS) and assigned an industry classification (if possible) by the Social Security Administration.

We sample births on a quarterly basis using a two-phase selection procedure. To be eligible for selection, a birth either must have no industry classification or be classified in an industry within the scope of the Annual Retail Trade Survey (ARTS), the Annual Wholesale Trade Survey (AWTS), or SAS, and it must meet certain criteria regarding its quarterly payroll. In the first phase, we stratify these EINs by industry and a measure of size based on quarterly payroll. A relatively large sample is selected using equal probability systematic sampling. Sampled EINs are canvassed to obtain a more reliable measure of size, consisting of sales or receipts for two recent months, company affiliation information, and a new or more detailed industry classification. The sales data are used as a measure of size for second phase sampling.

Using this more reliable information, in the second phase we subject the selected birth EINs from the first phase to probability proportional-to-size sampling with overall probabilities equivalent to those used in drawing the initial ARTS, AWTS, and SAS samples. The births selected for the QSS sample are a subset of the births selected for the SAS sample. These EINs are selected using probability-proportional-to-size sampling with overall stratum probabilities equivalent to those used in selecting the initial QSS sample. Because of the time it takes for a new employer firm to acquire an EIN from the IRS, and because of the time needed to accomplish the two-phase birth-selection procedure, we add births to the samples approximately nine months after they begin operation.

The IRS's Business Master File (BMF) indicates the business activity of an EIN. An EIN is considered to be BMF active if that EIN is used to report payroll information for the employees of the business represented by that EIN. A selected EIN is mailed and tabulated for a survey as long as it is BMF active. Once it goes BMF inactive, it is no longer mailed a survey questionnaire and is considered a

delete (or death). If at any time the EIN becomes active again, a questionnaire should once again be mailed, and it is considered a reactivation. In this case, its previously assigned tabulation characteristics such as weight, NAICS code, etc. will be used. Each quarter, in addition to checking for birth EINs, we check against the current Business Register to determine if any EINs on the survey have become BMF inactive or if inactive survey units have been reactivated.

Updates (i.e., births, reactivations, and deaths) to the QSS sample occur in the same manner and at the same time as updates to the SAS sample.

If a firm was selected with certainty and had more than one establishment at the time of sampling, any new establishments that the firm acquires, even if under new or different EINs, are included in the sample with certainty.

However, if a firm was selected with certainty and had only one establishment at the time of sampling, only future establishments associated with that firm's originally-selected EIN are included in the sample with certainty; any new EINs that might later be associated with that firm are subjected to sampling through the quarterly birth-selection procedure.

**Non-Response:** Data are imputed using survey data and administrative data as input for unit non-response, item non-response, and for responses that fail computer or analyst edits.

**Estimation Procedures:** Totals are computed as the sum of weighted data (reported and imputed) for all selected sampling units that meet the sample canvass and tabulation criteria given above. The weight for a given sampling unit is the reciprocal of its probability of selection into the sample. Variances are estimated using the method of random groups.

**Benchmarking:** Published estimates from the QSS are benchmarked using the latest SAS results as they become available as described on the website below. A detailed description of the benchmarking procedures for the introduction of the new QSS sample in 2012 is not yet available, but will be provided online at <http://www.census.gov/services/qss/qsstechdoc.html>.

**Seasonal Adjustment:** Seasonal factors are computed using the survey estimates as input to the Census Bureau's X-13ARIMA-SEATS software. The new factors are used to produce seasonally adjusted quarterly revenue estimates for all available quarters for select industries.

The X-13ARIMA-SEATS software improves upon the X-12-ARIMA seasonal adjustment software by providing enhanced diagnostics as well as incorporating an enhanced version of the Bank of Spain's SEATS (Signal Extraction in ARIMA Time Series) software, which uses an ARIMA model-based procedure instead of

the X-11 filter-based approach to estimate seasonal factors. The X-13ARIMA-SEATS and X-12-ARIMA software produce identical results when using X-13ARIMA-SEATS with the X-11 filter-based adjustments. The X-13ARIMA-SEATS software will be available from the Census Bureau's Internet site in the coming months.

Note that the QSS estimates continue to be adjusted using the X-11 filter-based adjustment procedure.

## **2. Procedures for Collecting Information**

Report forms are mailed to respondents at the end of each calendar quarter. They are expected to be completed 10 days after receipt. Respondents have the option of reporting by mail, Internet, telephone, or by facsimile.

## **3. Methods to Maximize Response**

The Census Bureau will take the following actions to maximize response rates:

- Customize mailing arrangements for selected large firms
- Conduct outside consultations
- Visit companies
- Offer Internet reporting
- Customize computer-imprinted instructions to clarify criteria for selected industries
- Provide a Web site with responses to Frequently Asked Questions
- Plan follow-up actions to contact delinquent respondents
- Provide a facsimile option to submit form
- Provide a toll-free number that companies can call for assistance

In instances where the survey coverage requires obtaining data from various subsidiaries or operating units of the company, specialized arrangements will be established to mail separate forms to each subsidiary or operating unit of the company. Customized mailings of this type have proven to be effective in obtaining more timely response and thus reducing follow-up costs, minimizing errors in reporting that result from coverage problems and reducing respondent burden.

Follow-up actions with approximate time frames will be taken for delinquent companies in the QSS. The facsimile reminder is conducted one day after the due date on the mail form. The facsimile form is due in 5 business days, and telephone follow-up is one day after due date on facsimile form.

In addition to the traditional method of reporting (mail-back), the QSS provides respondents the option of reporting on-line (Centurion), by telephone, or by

facsimile. Such options have provided an incentive for firms to report the required information in the QSS. As a result, historical trend patterns yield a report response of approximately 80 percent.

**4. Tests of Procedures or Methods**

The Census Bureau will use procedures based on the results and experiences gained during cognitive interviewing of the QSS, as well as the considerable body of experience with related economic censuses and surveys.

**5. Contacts for Statistical Aspects and Data Collection**

Sample design and statistical methodology questions should be directed to William C. Davie Jr., Assistant Division Chief for Research and Methodology, Service Sector Statistics Division, U.S. Census Bureau, 301-763-7182. Direct all other questions to Donna L. Hambric, Assistant Division Chief for Current Services and Transportation Programs, Service Sector Statistics Division, U.S. Census Bureau, 301-763-2639.

**List of Attachments**

- Attachment 1 – QSS forms matrix
- Attachment 2 – QSS cover letters and forms
- Attachment 3 – Letter of support from BEA