

**U.S. Department of Commerce
U.S. Census Bureau
OMB Information Collection Request
Monthly Retail Surveys (MRS)
OMB Control Number 0607-0717**

PART B. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS

1. Universe and Respondent Selection

The Advance Monthly Retail Trade Survey (MARTS) is a subsample of approximately 5,500 units (companies and EINs) selected from the larger Monthly Retail Trade Survey (MRTS) sample of about 13,000 units.

Sample Revision: A sample revision is the process used to re-design and re-select the samples for many of the Census Bureau's surveys of the retail, wholesale, and service industries. We do a sample revision approximately every 5-7 years for MRTS and every 2 and one-half to 3 years for MARTS. This process is performed to:

- ensure each sample is representative of its target population
- improve the efficiency of each sample
- incorporate updates to the industry classification structure
- expand industry coverage of the survey
- update questions and instructions to obtain more accurate data
- redistribute burden for small and medium size businesses

The current sample of retailers was introduced for April 2018 for MRTS and for May 2018 for MARTS. The following sections describe the methodology of the current sample.

MRTS

Sampling Frame: The sampling frame used for the MRTS consists of firms. The firms consist of one or more establishments. We create these sampling units from data collected as part of the 2012 Economic Census and from establishment records contained in the Census Bureau's Business Register as of October 2015.

To create the sampling frame, we extract the records for all employer establishments located in the United States and classified in the Retail Trade or Food Services sectors as defined by the 2012 NAICS. For these establishments we extract sales, payroll, employment, name and address information, as well as primary identifiers and, for establishments owned by multi-unit firms, associated Employer Identification Numbers (EINs). To create the sampling units, we aggregate the establishment data for all retail establishments associated with the same firm identifier. No aggregation is necessary to put single-unit establishment information on a firm basis. Thus, the sampling units created for single-unit firms simultaneously represent establishment and firm information.

Stratification: The sample for the MRTS uses a stratified, one-stage design with primary strata defined by industry. There are 80 primary strata. We further stratify the sampling units within industry group by a measure of size (substratify) related to their annual sales. Sampling units expected to have a large effect on the precision of the estimates are selected “with certainty.” This means they are sure to be selected and will represent only themselves (i.e., have a selection probability of 1 and a sampling weight of 1). Within each industry stratum we determine a substratum boundary (or cutoff) that divides the certainty units from the noncertainty units. We base these cutoffs on a statistical analysis of data from the 2012 Economic Census. Accordingly, these values are on a 2012 sales basis. We also use this analysis to determine the number of size substrata for each industry stratum and to set preliminary sampling rates needed to achieve specified sampling variability constraints on sales estimates for different industry groups. The size substrata and sampling rates are later updated through analysis of the sampling frame.

Sample Selection: Sample selection is a two-step process and begins by identifying the firms selected with certainty. If a firm's annual sales or end-of-year inventories are greater than the corresponding certainty cutoff, that firm is selected into the MRTS sample with certainty.

In the second step, all firms not selected with certainty are subjected to sampling. To be eligible for the initial sampling, a firm had to have nonzero payroll in 2014. We stratify the firms according to their major industry and their estimated sales (on a 2012 basis). Within each noncertainty stratum, we select a simple random sample of firms without replacement.

Sample Maintenance: We update the sample to represent EINs issued since the initial sample selection. These new EINs, called births, are EINs, recently assigned by the Internal Revenue Service (IRS), that have an active payroll filing requirement on the IRS Business Master File (BMF). An active payroll filing requirement indicates that the EIN is required to file payroll for the next quarterly period. The Social Security Administration attempts to assign industry classification to each new EIN.

EINs with an active payroll filing requirement on the IRS Business Master File we refer to as “BMF active,” and EINs with an inactive payroll filing requirement as “BMF inactive.”

We sample EIN births on a quarterly basis using a two-phase selection procedure. To be eligible for selection, a birth must either have no industry classification or be classified in an industry within the scope of the Service Annual Survey, the Annual Wholesale Trade Survey, or the Annual Retail Trade Survey, and it must meet certain criteria regarding its quarterly payroll. In the first phase, we stratify births by broad industry groups and a measure of size based on quarterly payroll. We select and canvas a relatively large sample to obtain a more reliable measure of size, consisting of sales in two recent months and a new or more detailed industry classification code. We contact births by telephone if they have not returned their questionnaire within 30 days.

Using this more reliable information, in the second phase we subject the selected births from the first phase to probability proportional-to-size sampling with overall probabilities equivalent to those used in selecting the initial MRTS sample from the October 2015 Business Register. 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 sample approximately nine months after they begin operation.

In general, we will include any new establishments that a firm acquires—even if under new or different EINs—into sample with the same sampling status as the original firm.

Each quarter, we check against the current Business Register to determine if any EINs on the survey have become BMF inactive. Typically, we do not canvass BMF inactive EINs during the reference month. Likewise, if any EIN on the survey was BMF inactive in a previous reference month and is now BMF active on the current Business Register, we again include these EINs in the canvass. In both cases, we only tabulate data for that portion of the reference year that these EINs reported payroll to the IRS.

Because births are not represented in the monthly survey until they go through the two-phase selection procedure, an interim procedure is used to account for births during the period of time between the onset of activity and the time of birth selection. This interim procedure consists of imputing data for all EINs currently in the monthly survey that go out of business but are still on the IRS BMF.

Births are added to the monthly survey in February, May, August, and November of each year. At the same time, inactive EINs are removed from the survey. To minimize the effect of births and inactive EINs on the month-to-month change estimates, we phase in these changes by incrementally increasing the sampling weights of the births and decreasing the sampling weights of the inactive EINs in a similar fashion. In the first month, we tabulate the births at one-third their sampling weight and tabulate the inactive EINs at two-thirds their sampling weight. In the second month, we tabulate the births at two-thirds their sampling weight and tabulate the inactive EINs at one-third their sampling weight. In the third month, we tabulate the births at their full sampling weight and the inactive EINs are dropped (sampling weight equal zero).

Estimation procedures:

Estimates of monthly sales and end-of-month inventories as well as quarterly e-commerce sales are derived from data collected in the MRTS. Each month, firms in the MRTS sample are asked to report their sales, e-commerce sales, and end-of-month inventory data for the month just ending. Monthly 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. The weight for a given sampling unit is the reciprocal of its probability of selection into the MRTS sample.

The monthly totals are then benchmarked to the latest totals from the Annual Retail Trade Survey (ARTS). Non-employers are included in the ARTS totals, and therefore, the monthly benchmarked totals account for nonemployers.

Monthly total estimates for broad industry groups (e.g., 2-, 3-, and 4-digit NAICS levels) are computed by summing the benchmarked monthly totals for the appropriate detailed industries comprising the broader industry group. Quarterly totals are computed similarly.

Period-to-period (e.g., month-to-month) change estimates are computed using the benchmarked monthly totals.

Variances are estimated using the method of random groups.

Seasonal adjustment: Estimates are adjusted for seasonal variation and holiday and trading-day effects where appropriate using the X-11 filter-based adjustment procedure available in the Census Bureau's X-13ARIMA-SEATS (AutoRegressive Integrated Moving Average – Signal Extraction in ARIMA Time Series) program. Seasonal adjustment models are reviewed on an annual basis.

MARTS

Sampling Frame: The MARTS sampling frame contains the active sampling units selected in MRTS.

Stratification: The MARTS units are stratified by broader industry categories than MRTS and substratified by annual sales size. Within each industry stratum, we stratify the sampling units into 4, 7, 10, or 13 substrata by a measure of size related to their annual sales. We select sampling units expected to have a large effect on the precision of the estimates “with certainty.” This means they are sure to be selected and will represent only themselves (i.e., have a selection probability of 1 and a sampling weight of 1). To identify the certainty units, we determine a substratum boundary (or cutoff) that divides the certainty units from the noncertainty units. We base these cutoffs on a statistical analysis of data extracted from the 2012 Economic Census and the Census Bureau's Business Register. We also use this analysis to determine the number and boundaries of non-certainty substrata for each industry group.

Sample Selection: Sample sizes are calculated to meet reliability constraints on estimated annual sales totals for specified industries. Sample selection is done independently within each size stratum using a systematic probability-proportional-to-size (PPS) procedure where the size used is the MRTS sampling weight. Within this sampling procedure MARTS sampling weights are constrained to be no larger than 1,000.

The MARTS sample is selected once the MRTS sample is selected and then again about half-way between MRTS samples, referred to as the mid-sample. For a MARTS mid-sample, the annual sales size for each unit is recalculated based on data from the MRTS, and units are selected using the same PPS procedure with similar strata sampling rates as the original sample.

New businesses are not added during the life of the MARTS sample. Therefore, as firms go out of business, refuse to respond, etc., the sample deteriorates and becomes less representative. By reselecting the MARTS subsample from MRTS, it better represents current business conditions and many small and medium-size firms are relieved of the early reporting burden.

Estimation procedures: Advance sales estimates for the most detailed industries are computed using a link-relative estimator. For each detailed industry, we compute a ratio of current-to-previous month weighted sales using data from units for which we have obtained usable responses for both the current and previous month. Imputed data for some influential units may also be used in the ratios. Then, for each detailed industry, the advance total sales estimate for

the current month is computed by multiplying this ratio by the preliminary sales estimate for the previous month (derived from the larger MRTS) at the appropriate industry level. Total estimates for broader industries are computed as the sum of the detailed industry estimates.

The preliminary sales estimate used in this computation includes data for non-employers (i.e., businesses without paid employees). Therefore, non-employers are represented in the published MARTS estimates. The link-relative estimate is used because there is no systematic tabulation-unit level imputation or adjustment for non-respondents in MARTS.

Variances are estimated using the method of random groups and are used to determine if measured changes are statistically significant.

Estimates are indirectly benchmarked to the Annual Retail Trade Survey (ARTS) estimates via the link-relative estimation method.

Seasonal Adjustment: Estimates are adjusted for seasonal variation and holiday and trading-day effects where appropriate using the X-11 filter-based adjustment procedure available in the Census Bureau's X-13ARIMA-SEATS (AutoRegressive Integrated Moving Average – Signal Extraction in ARIMA Time Series) program. Seasonal adjustment models are reviewed on an annual basis.

2. Procedures for Collecting Information

The sample is a probability sample selected from retail and food services employers (NAICS sectors 44, 45 and 722), contained in the Census Bureau's Business Register, which covers all employers who make social security payments for their employees under the Federal Insurance Contributions Act.

MRTS has approximately 13,000 retail firms included in the survey. Of this number, about 3,300 are large firms and were selected with certainty (100 percent chance of selection). The remaining are small and medium sized firms and were selected with non-certainty.

MARTS has approximately 5,500 retail firms included in the survey. Of this number, about 1,650 are large firms and were selected with certainty (100 percent chance of selection). The remaining are small and medium sized firms and were selected with non-certainty.

Data for the MRS are obtained at the 6-digit NAICS level with all intermediate and summary tables obtained by summation. Tabulations will include estimates on sales, inventories, and inventories/sales ratios for MRTS, whereas MARTS only includes estimates for sales. Data for the MARTS are published for 3-digit NAICS levels and for select 4-digit NAICS levels and total summary levels. Data for MRTS are published for four-digit and selected five-digit NAICS levels and total summary levels.

Statistical analysis of the monthly data will be based on comparison of the monthly data to:

- (1) annual survey estimates;
- (2) prior year monthly and annual survey results;
- (3) the results of the most recent Economic Census; and

(4) published trade, business, and media reports.

Comparisons of the monthly estimates to current and prior year annual and monthly estimates are produced by the use of data edits that identify firms exceeding predetermined tolerance cutoffs. The tolerance cutoffs specify acceptable dollar level and percent differences between the annual data, the previous annual estimates, and monthly data. Data analysis also includes research of inventory-to-sales ratios. Also, an analysis is made at the detailed NAICS level to determine if data reported for each subsector appear acceptable.

For the larger MRTS survey, for the first six months of 2019, the average response (in terms of total quantity response) to this voluntary survey was about 64 percent for sales, 63 percent for inventories, and 63% for e-commerce. The first six months of 2019 average response (in terms of units) to this voluntary survey was about 55 percent.

For the MARTS survey, for the first six months of 2019, the average response (in terms of dollar volume) to this survey was about 52 percent while the average unit response was about 47 percent.

It should be noted that the average responses stated above include months with delayed data collection and processing due to the impacts of the lapse in federal funding; response was at or above normal levels for those months.

3. Methods to Maximize Response

Respondents have the option to receive the MRS by mail, facsimile, or both. They also have the option to report via Internet and would receive a reminder. Responses can be provided via mail, facsimile, telephone, or Internet.

The National Processing Center in Jeffersonville, Indiana, performs a fax reminder and/or telephone follow-up for all firms that have not responded by a certain date. The telephone follow-up is also used if firms have not completely filled out the form or have reported questionable data that may be unacceptable for the estimates. Firms that refuse to respond to the survey are called to convey the importance of their participation.

A fax machine connected to an "800" telephone line permits fax reporting to our collection facility on a 24-hour basis. The Census Bureau also has an "800" toll-free telephone number in both Washington, D.C. and Jeffersonville, Indiana, to permit respondents to call in data or ask questions without extra expense. A Frequently Asked Questions section on our website also provides respondents a simple way to obtain answers to their questions. Respondents can also report online through the "Centurion" system, which allows respondents to report 24 hours a day, 7 days a week, at their convenience.

Nonresponse Bias Studies

As requested, in 2016 and 2017, the Census Bureau's Office of Statistical Methods and Research for Economic Programs completed a Nonresponse Bias Analysis for MARTS and MRTS respectively. As part of the studies, response rates were analyzed from April 2013 – December 2015 for both surveys. The reason for using data beginning with April 2013 was to

only include observations on the current sample design in the analysis to reduce unknown sources of bias. These studies include analysis of Unit Response Rates (URR) for both surveys as well as Total Quantity Response Rates for MRTS and Dollar Volume Response Rates for MARTS.

The MARTS and MRTS response rate analyses found that there are different reporting patterns observed from the certainty units, typically the larger firms, and noncertainty units, typically small and medium size firms, of each survey. URRs for non-certainty companies are significantly lower than URRs for certainty companies. Some of our key additional efforts to continue to improve the participation of all respondents are outlined below.

Additional Efforts to Maximize Response

To help maximize response, we conduct specialized efforts with companies reluctant to participate in the survey. With the introduction of our latest sample, we re-mailed surveys to companies that declined to participate on the prior sample in hopes of obtaining their response on the current sample. This effort took place at the end of 2017 for the latest sample.

Since the MARTS and MRTS surveys are voluntary, retailers have been increasingly reluctant to supply data. Census has employed a number of new strategies to encourage response, as explained below. We have:

- Created targeted calling lists for MARTS that focuses on the largest nonresponse cases. This will ensure that the largest dollar-volume cases are called by the National Processing Center to increase dollar-volume response rates. Additionally, there are plans to implement targeted calling for MRTS.
- Implemented innovative mailing techniques to increase company awareness of the importance of the survey. We have found that by increasing the use of certified mailings to chronic non-respondents (approximately 1,600 companies) in the MRTS, we successfully increased the response rate by 1.5%. We started implementing certified mailing in August 2019 for MRTS.
- Continued to reach out to chief economists of large companies through collaboration with the National Association of Business Economists (NABE), asking them to convince their companies to participate in this important survey.
- Worked with the Secretary of Commerce to reach out to CEOs of large companies on the importance of their company's participation in the MRS. This outreach was either through phone calls or letters.
- Partnered with The NPD group to obtain data to supplement response rates for some of our largest nonresponse cases. This partnership started in the November 2018 period of data collection but was not announced until February 2019 because of the government shutdown

For the MARTS mid-sample selection, halfway between MRTS samples, we allow a greater chance of selection to firms that have recently reported to the MRTS survey. This selection

increases the dollar volume response rate once the mid-sample is implemented. With the full 2012 retail sample revision of the Annual, Monthly, and Advance Monthly Trade Surveys, the response quickly declined until the 2015 MARTS mid-sample. To prevent the decline in the 2017 full sample revision, we allowed a greater chance of selection for MARTS to firms that reported early to the Annual Retail Trade Survey already in the field.

4. Testing of Procedures

We continuously edit the reported data and monitor procedures and methods for data collection in an effort to reduce reporting burden and improve data quality.

5. Contacts for Statistical Aspects and Data Collection

Questions concerning planning and implementation of this survey are under the direction of Paul Bucchioni, Chief of the Retail Indicators Branch, Census Bureau, (301) 763-7125.

Attachments:

1. MARTS - Press Releases June 2019
2. Centurion Online Cover Letters
3. MRTS Fax Reminder
4. Copy of BEA letter of support – MARTS
5. Copy of BEA letter of support – MRTS
6. Initial Mail Letters
7. Screenshots of Centurion Online
8. MRTS Mail Forms
9. MARTS Mail Forms
10. MARTS Initial E-mail
11. MRTS Initial E-mail
12. MRTS E-mail Reminder
13. Annual Letters