Response Rates

Economic surveys at the Census Bureau are required to compute two different indicators of data quality: a unit response rate and weighted item response rates, called total quantity response rates.

Please see the end of this document for paragraphs that provide details about the types and status of units used to collect and tabulate data.

Two Types of Response Rates

The **unit response rate (URR)** is defined as the percentage of active reporting units in the statistical period, based on unweighted counts, that were eligible for data collection or of unknown eligibility that responded to the survey. URRs are indicators of the performance of data collection for obtaining usable responses. To be classified as a response, the respondent for the reporting unit must have provided sufficient data and the data must satisfy all the edits. To be considered a respondent in ARTS, the retailer must provide sales, end-of-year inventories, purchases, or total expenses, or e-commerce sales if the reporting unit's activity is 100 percent e-commerce. Responses are obtained predominantly by Internet but may also be obtained through mail, telephone, or facsimile. The URR for the 2018 ARTS is:

2018 ARTS Unit Response Rate

Total Retail Trade (Sectors 44-45)	64.1

The **total quantity response rate (TQRR)** is defined as the percentage of the estimated (weighted) total of a given data item reported by the active tabulation units in the statistical period or from sources determined to be equivalent-quality-to-reported data. The TQRR is an item-level indicator of the "quality" of each estimate. In contrast to the URR, these weighted response rates are computed for individual data items, so that a survey may produce several TQRRs per statistical period and release. The TQRR is a weighted measure that takes the size of the tabulation unit into account as well as the associated sampling parameters. To compute the TQRR for a particular estimate, it is necessary to determine the source of the final tabulated value of the associated data item for each tabulation unit. This value could be directly obtained from respondent data, indirectly obtained from other equivalent quality data sources, or imputed. The TQRRs for select data items for the 2018 ARTS are as follows:

2018 ARTS Total Quantity Response Rates

	Sales	Operating Expenses	E-commerce	Inventories	Purchases	Accounts Receivable
Total Retail Trade (Sectors 44-45)	91.7	84.1	86.9	89.7	66.9	62.0

An estimate with a coefficient of variation (CV) greater than 30 percent, with a total quantity response rate (TQRR) less than 50 percent, or with other concerns about data quality has been suppressed from publication, unless the estimate has consistently been published for prior years and the CV and TQRR are acceptably close to the thresholds. A suppressed estimate and its corresponding measure of sampling variability have been replaced with an "S" in the published tables. For a description of the Census Bureau's standards for releasing information products, see https://www.census.gov/about/policies/quality/standards/standardf1.html.

Types of Units

A **survey unit** is an entity selected from the underlying statistical population of similarly constructed units. Examples of survey units for different economic programs include establishments, firms, state and local government entities, and building permit-issuing offices. For ARTS, the survey unit is either an EIN or company. The survey unit may change in composition over time, perhaps due to mergers, acquisitions, or divestitures.

A **reporting unit** is an entity about which data are collected. Reporting units are the vehicle for obtaining data and may or may not correspond to a survey unit for several reasons. First, the composition of the originally sampled entity can change over the sample's life cycle, as noted above. Second, for some surveys, an entity may request (or the Census Bureau may ask the entity) to report data in several separate pieces corresponding to different parts of the business or other entity type. For example, a large, diverse company in a company-based collection may request a separate form for each region or kind of business in which it operates or may ask to report separately for each of its establishments to align with its record keeping practices. For ARTS, reporting units are usually created to facilitate the collection and tabulation of data by industry.

A **tabulation unit** houses the data used for estimation (or tabulation, in the case of a census). As with reporting units, the tabulation units may not correspond to a survey unit. Some programs consolidate establishment or plant-level data to a company level to create tabulation units, so that the tabulation unit is often equivalent to the survey unit. Other programs create artificial units that split a reporting unit's data among the different industries in which the reporting unit operates. In this case, the tabulation unit represents a portion of a survey unit. For ARTS, the tabulation unit is either a reporting unit or an artificial unit created to split the reporting unit's data among the different in-scope industries in which the reporting unit operates.

Status of Units

For each survey, the **statistical period** describes the reference period for the data collection. For example, an annual program might collect data on the prior year's business activity; the statistical period refers to the prior year, but the data are collected in the current calendar year.

During a given statistical period, all three types of units can be active, inactive, or ineligible. An **active** unit is in business and is in-scope for the program during the statistical period. An **inactive** unit is not operating or is not in-scope during the statistical period but is believed to have been active in the past and can potentially become active and in-scope in the future. Finally, a survey unit may become **ineligible** and excluded from response rate computations due to a change in industry classification or ceasing to conduct business operations. All units are considered active until verified evidence otherwise is provided.

For additional information about response rates, see the Census Bureau's Statistical Quality Standard D.3., Appendix B: Requirements for Calculating and Reporting Response Rates for Economic Surveys.