

INTRODUCTION

The U.S. Census Bureau produces the *Annual Revision of Monthly Retail and Food Services* to provide revised national estimates by kind of business of monthly sales for establishments classified in the retail trade and food services industries. Revised estimates of end-of-month inventories and inventory-to-sales ratios are also provided, but only for retail trade.

We develop the estimates in this report using data from the [*Advance Monthly Retail Trade and Food Services Survey*](#) (MARTS), [*Monthly Retail Trade Survey*](#) (MRTS), [*Annual Retail Trade Survey*](#) (ARTS), and administrative data. For each survey, questionnaires are mailed to a probability sample of firms located in the United States and having paid employees. The samples are updated regularly and periodically reselected. These samples include firms of all sizes. Firms without paid employees (nonemployers) are included in the ARTS estimates through administrative data provided by other Federal agencies and through imputation. Nonemployers are represented in the monthly retail estimates via the procedure used to benchmark the monthly estimates using ARTS results.

Additional information on MARTS, MRTS, and ARTS can be found on the Census Bureau Web site at <http://www.census.gov/retail>.

COVERAGE

The estimates in this publication are summarized by industry classification based on the [*2007 North American Industry Classification System*](#) (NAICS). NAICS groups establishments into industries based on the activities in which they are primarily engaged. This system, developed jointly by the statistical agencies of Canada, Mexico, and the United States, allows for comparisons of business activity across North America.

Retail trade, as defined by [NAICS sectors 44-45](#), includes establishments engaged in selling merchandise in small quantities to the general public, without transformation, and rendering services incidental to the sale of merchandise. Two principal types of establishments classified in retail trade are distinguished:

1. Store retailers operate fixed point-of-sale locations, located and designed to attract a high volume of walk-in customers. They have extensive displays of merchandise, use mass-media advertising to attract customers and typically sell merchandise to the general public for personal or household use. Some store retailers also provide after-sales services, such as repair and installation; for example, new automobile dealers.
2. Nonstore retailers also serve the general public, but their retailing methods differ. Such methods include paper and electronic catalogs, door-to-door solicitation, in-home demonstration, “infomercials,” selling from portable stalls or through vending machines.

Food services, as defined by NAICS subsector 722, include establishments that prepare meals, snacks, and beverages to customer order for immediate on-premises and off-premises consumption.

A summary of changes from the prior report and the procedures for producing the revised estimates are described below.

EXPLANATION OF REVISIONS

The estimates in this publication reflect the introduction of a newly selected sample of businesses on a 2007 NAICS basis. For more information on the new sample and 2007 NAICS, see our FAQs at http://www.census.gov/retail/mrts_sample_revision_faqs.html. For information on how estimates are linked between samples see the Revisions section below.

Revised quarterly retail e-commerce sales estimates are also provided on the website at <http://www.census.gov/retail/#ecommerce>.

Not adjusted estimates of monthly sales are revised for January 1992 through March or April 2013¹ (if an advance sales estimate is computed), as well as end-of-month inventory estimates for January 1992 through March 2013. Not adjusted estimates of quarterly retail e-commerce sales are revised for fourth quarter 1999 through first quarter 2013.

Revisions were made in two parts: First, revisions were made to prior Monthly Retail Trade estimates to reflect historical corrections. Revisions were then made when benchmarking the Monthly Retail Trade estimates to the 2011 Annual Retail Trade estimates.

Revisions to the Prior Sample due to Historical Corrections

Not adjusted estimates from the prior samples for monthly sales were revised for January 1992 through March 2013, as well as end-of-month inventory estimates for January 1992 through March 2013. We revised the not adjusted estimates from the prior sample to reflect historical corrections to data in the prior MARTS, MRTS, and ARTS samples. These corrections are made to replace previously reported data with more accurate data received at a later date, or to replace imputed data with reported data obtained from the company. Historical corrections are as follows:

- For NAICS 446 (Health and Personal Care Stores) and corresponding aggregate levels, revisions were made from January 1992 through March 2013 to reflect revised ARTS estimates and historical corrections to the MRTS estimates.
- For NAICS 4541 (Electronic Shopping and Mail Order Houses) and corresponding aggregate levels, revisions were made from January

2010 through March 2013 to reflect historical corrections to the MRTS estimates.

- For select other detail NAICS levels, revisions were made to January 2011 through March 2013 based on historical corrections to the MRTS estimates.

Estimates of Monthly Sales

Historical corrections were first applied to the previously published MRTS sales estimates. Then:

For NAICS 446, the monthly sales estimates for January 1992 through December 2012 were input into the benchmarking program. Using this program, the estimates for 446 were revised in a manner that:

- For 1992 through 2010, constrains the sum of the 12 monthly sales estimates to equal the revised 2010 ARTS sales estimates.
- Minimizes the sum of the squared differences between the month-to-month changes of the input and revised estimates for January 1992 through December 2012.

Estimates of End-of-Month Inventories

Historical corrections were first applied to the previously published MRTS end-of-month inventory estimates. Then:

For NAICS 446, the monthly end-of-month inventory estimates for January 1992 through December 2012 were input into the benchmarking program. Using this program, the estimates for 446 were revised in a manner that:

- For 1992 through 2010, constrains December end-of-month inventory estimates from MRTS to equal the revised 2010 ARTS end-of-year inventory estimates.
- Minimizes the sum of the squared differences between the month-to-month changes of the input and revised estimates for January 1992 through December 2012.

Estimates of Quarterly E-commerce Sales

Historical corrections were applied to the previously published MRTS e-commerce sales estimates. Only NAICS 4541 had historical corrections to previously published e-commerce sales estimates and only from January 2011 through March 2013.

Seasonally Adjusted Estimates

For NAICS 446, new seasonal, trading-day, and holiday factors are computed and used to adjust sales and end-of month-inventories for January 1992 through March 2013. The new seasonal factors are computed using the revised not adjusted estimates as input to the Census Bureau's X-13ARIMA-SEATS software and using the X-11 filter-based adjustment procedure.

Benchmarking to 2011 ARTS estimates

After completing the revisions to the prior samples estimates, a second step was performed. This was done to:

- Link the current MRTS sample to the revised estimates from the prior MRTS samples described above.
- Benchmark the MRTS estimates to the results from the 2011 ARTS, which has been benchmarked using final results of the 2007 Economic Census.

There are several reasons for benchmarking estimates from the Monthly Retail Trade Survey to the Annual Retail Trade Survey:

- **Timing.** The respondents have more time to prepare their annual and census reports than they do for their monthly reports. The annual and census responses are requested at a time when many firms have already compiled audited book figures for their own use. The timing of the annual survey is such that we are also able to obtain independent verification of the reported data from such sources as a company's annual report. On the other hand, respondents to the monthly survey have just a few weeks to provide reports of their sales and end-of-month inventories. Sometimes these reports are based on incomplete or unaudited records and may include estimates made by respondents to represent their understanding of their business.
- **Sampling.** As described in more detail in the Technical Documentation, the estimates derived from the annual survey are based on a sample that is much larger than the samples used to produce the monthly sales or inventory estimates. MRTS estimates are benchmarked to the results from the 2011 ARTS, which reflects the introduction of the new samples on a 2007 NAICS basis and have been indirectly benchmarked using the final results of the 2007 Economic Census. See ARTS methodology page for more information http://www.census.gov/retail/arts/how_surveys_are_collected.html.
- **Response.** The annual estimates are based on more reported data than are the monthly estimates. The response to the ARTS is required by law, while the MRTS is voluntary. This requirement results in a total quantity response rate (TQRR) of 93 percent for sales and 93 percent

for inventories and a rate of approximately 72 percent for sales and 69 percent for inventories for MRTS. An imputation process accounts for the sales and inventories data that fail edits or are missing because of nonresponse. For MRTS, this process assumes that nonresponding firms have similar month-to-month changes to the responding firms of a similar size in the same industry. However, the ARTS imputation process relies heavily on administrative data and relationships of these data for each individual firm, which could result in different data being tabulated for the MRTS and ARTS for nonresponding firms.

Estimates of Monthly Sales

For each detailed NAICS code, the monthly retail and food service sales estimates for January 1992 (the beginning of the series) through February 2013 are linked to the estimates derived from the current sample. The linkage is performed at each detailed NAICS level by multiplying the sample-based estimates prior to March 2013 by a geometric mean. The geometric mean is computed as the square root of the product of two ratios. The numerators of the ratios are the Horvitz-Thompson sales estimates for February and March 2013 from the current sample. The denominators of the ratios are the Horvitz-Thompson estimates for February and March 2013 from the prior sample.

After performing the above linkage, the resulting sales estimates for December 2008 through March 2013 are input to the benchmarking program. The estimates for a given detailed NAICS code are revised in a manner that—

- For 2009 through 2011, constrains the sum of the 12 monthly sales estimates to equal the corresponding annual sales estimate from ARTS.
- Minimizes the sum of the squared differences between the month-to-month changes of the input and revised estimates for December 2008 through March 2013.
- Uses the previously published December 2008 sales estimate as a constraint, linking the revised estimates to the previously published sales estimates and resulting in no revision to the December 2008 estimate.

A mathematical result of the benchmarking methodology is that, for a given NAICS code, all published monthly sales estimates after December 2011 are derived by multiplying the Horvitz-Thompson estimates by the ratio of the benchmarked-to-input estimate for December 2011. This ratio, which is called a carry-forward factor, remains the same and is used to derive published monthly sales estimates until the next benchmarking operation.

If an April 2013 advance sales estimate is computed for an industry, the estimate may also be revised based on historical corrections made to data for March or April 2013. For more information on how advance estimates are computed, see the Census Bureau Web site at

http://www.census.gov/retail/marts/how_surveys_are_collected.html.

Revised estimates for aggregate industry levels are computed by summing the revised estimates for the appropriate detailed industries comprising the aggregate.

Estimates of End-of-Month Inventories

For each detailed NAICS code, the end-of-month inventory estimates for January 1992 (the beginning of the series) through February 2013 are linked to the estimates derived from the current sample. The linkage is performed using a procedure similar to the one used for sales, except the geometric mean is based on end-of-month inventory.

After performing the above linkage, the resulting end-of-month inventory estimates for December 2004 through March 2013 are input to the benchmarking program. The estimates for a given detailed NAICS code are revised in a manner that—

- For 2004 through 2011, constrains the December end-of-month inventory estimates from MRTS to equal the end-of-year inventory estimates derived from ARTS.
- Minimizes the sum of squared differences between the month-to-month changes of the input and revised estimates for December 2004 through March 2013.
- Minimizes Uses the previously published December 2004 estimate as a constraint, linking the revised estimates to the previously published estimates and resulting in no revision to the December 2004 estimate.

For a given detailed NAICS code, end-of-month inventory estimates subsequent to December 2011 are derived by multiplying the input estimates by the ratio of the benchmarked-to-input estimate for December 2011. This ratio is the carry-forward factor for inventory, and it remains the same until the next benchmarking operation.

Revised estimates for aggregate industry levels are computed by summing the revised estimates for the appropriate detailed industries comprising the aggregate.

Estimates of Quarterly E-commerce Sales

For select detail NAICS codes (usually at the 3-digit NAICS level), quarterly retail e-commerce sales estimates for fourth quarter 1999 through fourth quarter 2012 are linked to the estimates derived from the current sample. The

linkage is performed at these select detail levels by multiplying the sample-based estimates prior to first quarter 2013 by a ratio. The numerators of the ratios are the Horvitz-Thompson e-commerce sales estimates for first quarter 2013 from the current sample. The denominators of the ratios are the Horvitz-Thompson e-commerce sales estimates for first quarter 2013 from the prior sample. Monthly e-commerce estimates are also linked at these select detail levels using a procedure similar to the one used for sales, except the geometric mean is based on monthly e-commerce sales estimates.

After performing the above linkage, the resulting e-commerce sales estimates for fourth quarter 1999 through first quarter 2013 are input to the benchmarking program. The estimates for the select detailed NAICS code are revised in a manner that—

- For 2000 through 2011, constrains the sum of the 4 quarterly e-commerce sales estimates to equal the corresponding annual sales estimate from ARTS.
- Minimizes the sum of squared differences between the quarter-to-quarter changes of the input and revised estimates for fourth quarter 1999 through first quarter 2013.

Similarly, the monthly e-commerce sales estimates at these select detail levels for October 1999 through March 2013 are input into the benchmarking program. These estimates for the select detail levels are revised in a manner that—

- For fourth quarter 1999 through first quarter 2013, constrains the sum of the 3 months in a given quarter to equal the corresponding quarterly e-commerce sales estimate which has been benchmarked to ARTS.
- Minimizes the sum of squared differences between the month-to-month changes of the input and revised estimates for October 1999 through March 2013.

For select detailed NAICS levels, monthly e-commerce sales estimates subsequent to March 2013 will be derived by multiplying the input estimates by the ratio of the benchmarked-to-input estimate for fourth quarter 2011. This ratio is the carry-forward factor for e-commerce sales, and it remains the same until the next benchmarking operation.

The revised estimates for the total retail quarterly e-commerce sales are computed by summing the revised estimates for the appropriate detailed industries comprising the aggregate.

Seasonally Adjusted Estimates

New seasonal, trading-day, and holiday factors are computed and used to adjust sales for January 2006 through March or April 2013 (if an advance sales estimate is computed). For inventories, new seasonal factors are computed and used to adjust inventories for

January 2002 through March 2013. For quarterly e-commerce sales, new seasonal factors are computed and used to adjust e-commerce sales for fourth quarter 1999 through first quarter 2013. For sales, inventories, and e-commerce sales, the new seasonal factors are computed using the revised unadjusted estimates as input to the Census Bureau's X-13ARIMA-SEATS software and using the X-11 filter-based adjustment procedure.

REVISIONS OF SALES AND INVENTORIES

The following table shows a comparison of the revised sales and inventories to the previously published estimates for 2012:

[2012 Retail and Food Services Sales and Retail Inventories Comparison of the Revised Estimates to the Previously Published Estimates](#)

DEFINITION OF TERMS

Dollar Values

All dollar values presented are expressed in current dollars; that is, the estimates are not adjusted to a constant dollar series. Consequently, when comparing estimates to prior years, users also should consider price level changes.

Confidentiality

Title 13 of the United States Code authorizes the Census Bureau to conduct censuses and surveys. Section 9 of the same Title requires that any information collected from the public under the authority of Title 13 be maintained as confidential. Section 214 of Title 13 and Sections 3559 and 3571 of Title 18 of the United States Code provide for the imposition of penalties of up to 5 years in prison and/or up to \$250,000 in fines for wrongful disclosure of confidential census information. In accordance with Title 13, no estimates are published that would disclose the operations of an individual firm.

The Census Bureau's Internal Disclosure Review board sets the confidentiality rules for all data releases. A checklist approach is used to ensure that all potential risks to the confidentiality of the data are considered and addressed.

Disclosure Limitation

A disclosure of data occurs when an individual can use published statistical information to identify either an individual or firm that has provided information under a pledge of confidentiality. Disclosure limitation is the process used to protect the confidentiality of the survey data provided by an individual or firm. Using disclosure limitation procedures, the Census Bureau modifies or removes the characteristics that put confidential information at risk for disclosure. Although it may appear that a table shows information about a specific individual or business, the Census Bureau has taken steps to

disguise or suppress the original data, while making sure the results are still useful. The techniques used by the Census Bureau to protect confidentiality in tabulations vary, depending on the type of data.

Unpublished Estimates

It should be noted that some unpublished estimates can be derived directly from this report by subtracting published estimates from their respective totals. However, the estimates obtained by such subtraction would be subject to the poor response rates or high sampling variability.

Individuals who use estimates in this report to create new estimates should cite the Census Bureau as the source of only the original estimates.

Adjustment Factors

[The X-13ARIMA-SEATS program](#) (version 1.1, build 4) was used to derive the factors for adjusting estimates for seasonal variations and, in the case of sales, for trading-day and holiday differences. Not adjusted sales and inventory estimates for January 1992 through March or April 2013¹ (if an advance sales estimate was computed) were input to this program.

Seasonal adjustment of estimates is an approximation based on current and past experiences. Therefore, the adjustment could become less precise because of changes in economic conditions and other elements that introduce significant changes in seasonal, trading-day, or holiday patterns.

Sales

Sales include merchandise sold (for cash or credit at retail or wholesale) by establishments primarily engaged in retail trade. Services that are incidental to the sale of merchandise, and excise taxes that are paid by the manufacturer or wholesaler and passed along to the retailer are also included. Sales are net, after deductions, for refunds and allowances for merchandise returned by customers. Sales exclude sales taxes collected directly from customers and paid directly to a local, state, or federal tax agency.

The estimates of sales measure the operations receipts rendered by stores that primarily sell at retail. The sales estimates represent total sales and receipts of all establishments primarily engaged in retail trade. They do not include sales at retail by manufacturers, wholesalers, service establishments, and others whose primary activity is other than retail trade. Because the retail establishment is the basic unit of measure, the published estimates of sales by type of retail store are not intended to measure the total sales for a given commodity or merchandise line.

Inventories

Merchandise inventories are the value of stocks of goods held for sale. The inventories estimates represent the value, at cost, of the merchandise available for sale as of the last day of the report period. Methods of valuation may vary according to the accounting practices of each firm. The estimates provided in

this report are valued on a non-LIFO (last in, first out) basis. Note—LIFO is a method of valuing inventory where the latest items of merchandise added to the inventory are the first ones taken out. Non-LIFO would mean that another method, such as FIFO (first in, first out), was used to establish the value of the inventory available for sale. Merchandise inventories are shown for stores and warehouses servicing retail establishments. Included are only those warehouses that maintained supplies of merchandise primarily intended for distribution within the organization.

Inventories/ Sales Ratios

The inventories/ sales ratios show the relationship of the end-of-month values of inventory to the monthly sales. These ratios can be looked at as indications of the number of months of inventory that are on hand in relation to the sales for a month. For example, a ratio of 2.5 would indicate that the retail stores have enough merchandise on hand to cover two and a half months of sales.

E-Commerce

E-commerce is the sale of goods and services where the buyer places an order, or the price and terms of the sale are negotiated over an Internet, mobile device (M-Commerce), extranet, EDI network, electronic mail or other online system. Transactions are agreements between buyers and sellers to transfer ownership of, or rights to use, goods or services. Payment for these goods and services may or may not be made online.

Leased Department

Leased departments are broadly defined as operations of one company conducted within the establishment of another company. Typical examples may include jewelry counters or optical centers within department stores.

GAFO

GAFO represents sales at stores that sell merchandise normally sold in department stores. GAFO includes the following kinds of retail businesses:

- General merchandise stores (NAICS 452).
- Clothing and clothing accessories stores (NAICS 448).
- Furniture and home furnishings stores (NAICS 442).
- Electronics and appliance stores (NAICS 443).
- Sporting goods, hobby, book, and music stores (NAICS 451).
- Office supplies, stationery, and gift stores (NAICS 4532).

ADDITIONAL INFORMATION

Survey Questionnaires

The ARTS questionnaires can be found on the Census Bureau Web site at

http://www.census.gov/retail/arts/get_forms.html. The MRTS questionnaires can be found on the Census Bureau's Web site at http://www.census.gov/retail/mrts/get_forms.html.

1 Advance sales estimates are computed for selected kinds of business and are based on a small subsample selected from the larger MRTS sample.

Related Links:

[Advance Monthly Retail Trade & Food Services
Monthly Retail Trade Survey](#)
[Annual Retail Trade Survey](#)
[E-Stats – Measuring the Electronic Economy](#)

Source: [Retail Indicators Branch](#), U.S. Census Bureau
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