

Manufacturing and Trade Inventories and Sales

Reliability of Estimates

There are two types of errors possible in an estimate based on a sample survey: sampling and nonsampling. Sampling errors occur because observations are made on a sample, not on the entire population. Nonsampling errors can be attributed to many sources in the collection and processing of the data, such as differences in the interpretation of questions. Additionally, monthly estimates prior to March 2001 have been restated from SIC-based estimates. The restatement methodology may have introduced additional nonsampling error. Although no direct measurement of the biases due to nonsampling errors has been obtained, precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize their influence. The accuracy of a survey result is determined by the joint effect of sampling and nonsampling errors.

The standard error of the estimate is a measure of the variability among the estimates from all possible samples of the same size and design. It is thus a measure of the precision with which an estimate from a particular sample approximates the results of a complete enumeration. The coefficient of variation (expressed as a percent) is the standard error of the estimate times 100 divided by the value being estimated. Typical practice is to construct a 90- or 95-percent confidence interval. A 90-percent confidence interval based on the estimated coefficient of variation is:

Estimate +/- [1.753*(coefficient of variation)*(estimate)/100]

For example:

Estimate: 1,000,000

CV: 1.12

Confidence interval:

1,000,000 +/- [1.753*(1.12)*(1,000,000)/100]

1,000,000 +/- 21,036

Therefore, we conclude with 90 percent confidence, that the estimate is between 978,964 and 1,021,036.

If an estimate of the standard error is given, construct the 90-percent confidence interval as:

Estimate +/- [1.753*(standard error)]

For example:

Estimated year-to-year percent change: +0.2%

Standard error: 0.6

Confidence interval:

0.2 +/- [1.753 * 0.6]

0.2 +/- 1.05

In this example, as the confidence interval includes zero, we cannot conclude there was an increase from the previous year.