

Dissemination of Census and Survey Data Products

Version 1.3

Issued: 21 Jan 09

Census Bureau Standard

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Document Management & Control¹

Version	Issue Date	Approval	Description
1.0	19 May 05	Associate Directors	Initial Release
1.1	09 Mar 06	Configuration Mgr.	Inserted hyperlinks to supporting documents.
1.2	08 Jan 08	Associate Directors	Exempted Press Releases and presentation slides from Requirement 4.
1.3	21 Jan 09	Qual. Prog. Mgr.	Updated references to the Associate Director for Methodology and Standards.

¹ The current version of this document is maintained on the Census Bureau Intranet and may be accessed from the Methodology & Standards Council website.

Census Bureau Standard: Dissemination of Census and Survey Data Products

Introduction

The Census Bureau Quality Standards are survey or statistical methodology procedures for all U.S. Census Bureau program areas. The Methodology and Standards Council sets these standards, with concurrence of the Associate Directors of the affected areas, for Census Bureau surveys and censuses. This responsibility encompasses setting relevant standards for Census Bureau data products.

The Census Bureau has issued four standards governing the dissemination of data products.

1. Review and Approval of Census Bureau Documents and Presentations;
2. Dissemination of Census and Survey Data Products (this standard);
3. Minimal Information to Accompany Any Report of Survey or Census Data; and
4. Describing the Sources and Accuracy of Tabulations and Estimates

All four standards work together to ensure that the information the Census Bureau publishes is accurate and reliable, and to inform our customers of the quality of that information. The first two standards provide the foundation of these requirements and the last two provide more detail on specific aspects of data dissemination.

Each year the Census Bureau publishes a vast number of estimates on many subjects. It is the Census Bureau's responsibility to inform our data users of the important limitations of the estimates, both those due to sampling and those due to response and other nonsampling errors. The Census Bureau Standard for Dissemination of Census and Survey Data Products (the Standard) meets this responsibility. The Standard accommodates varying types of data products and the nature and extent of the information available on the types of errors that affect the published estimates.

This Standard ensures that all data published and statistical statements made satisfy the required level of statistical rigor. However, it does not address disclosure avoidance. If there are concerns about disclosure avoidance, refer to the Census Bureau Standard for Disclosure Review.

Scope

This Standard applies to the following documents (and their revisions) prepared by Census Bureau staff: news releases; standard Census Bureau publications; evaluations; data released outside the Census Bureau, including unpublished data; microdata documentation; Census Bureau technical reports; division report series; technical abstracts; presentations at conferences (e.g., the Joint Statistical Meetings); proceedings papers from conferences; peer-reviewed journal articles and book chapters; and OMB survey clearance requests. The Standard is the same for both printed and electronic documents.

The first two requirements of the Standard apply to *all* the above documents with the only exception noted for requirement 1. The application of the last three requirements may vary by type of report.

The third requirement calls for a statement on the errors in the data. The amount of information provided must take into account the length of the report. In the abstract summarizing a technical report, there may not be room for a statement on error. However, the report itself should discuss the potential types of error or refer to a longer work that discusses sources of error. Short reports must include, as a minimum, a statement explaining that the data are from a sample (if applicable), and are subject to error from sampling variation and other factors, and that comparisons in the report have undergone statistical testing and meet Census Bureau standards. Short reports must also include contact information for readers who wish to know more about data limitations. Longer reports should have a commensurate amount of information on sampling and nonsampling errors.

Requirements 4 and 5 call for estimates or indicators of the magnitude of sampling and nonsampling error in some form.

Requirements of the Standard

All the examples listed below, which demonstrate the application of these requirements, are given in Supporting Document A.

1. All comparative statements, stated or implied, based on survey data, must be supported by statistical testing.
 - Before making statements about differences, multiple comparisons, ranks, or other numbers, perform a hypothesis test at the 10-percent level of significance using appropriate statistical procedures. This calculation provides the basis for a 90-percent confidence interval for the statistic. When reporting on results, the text must make clear whether items being compared are statistically different. This may be done by a blanket statement that the differences are statistically significant unless otherwise noted, or by an explicit statement for each reported result that the differences are or are not statistically significant. In either case, the required statement may be in the text or in footnotes.

Furthermore, explicit statements of changes that are not statistically significant are only allowed for data items in Supporting Document B. For these items, confidence intervals should be provided along with a footnote to indicate the test results. For complete enumerations, there is no sampling error, and hypothesis tests are not needed. (Ex. 1a-1i, 1l-1o)

The following blanket statement may be used in lieu of a specific statement of statistical significance for each data item: “All statements in this report have undergone statistical testing, and all comparisons are significant at the 90-percent confidence level unless otherwise noted.”¹

Because the estimate is included in Supporting Document B, the following statement is also acceptable: "The Census Bureau of the Department of Commerce announced today that advance estimates of U.S. retail and food services sales for February, adjusted for seasonal, holiday, and trading-day differences, but not for price changes, were \$327.2 billion, an increase of 0.6 percent ($\pm 0.8\%$) from the previous month." There should also be a statement in the text or in a footnote that the apparent change is not statistically significant.

- Implicit statements about the data are those that can be inferred because of the close proximity of the estimates in the text. The requirement for implicit and explicit statements *is the same*. (Ex. 1j and 1k)
2. The level of detail for a published table must be appropriate for the sampling and nonsampling errors associated with the estimates.

Tables with some large sampling variances (but not serious bias) may be released to users with appropriate indications of the errors and their implications. (Ex. 2a-2c)
 3. All data products must include text stating that the data are subject to error arising from a variety of sources.²
 - Define and interpret the term sampling error if the data are derived from a sample. The definition follows – for a given estimator, the difference between an estimate based on a

¹ Alternative wording, in terms of the significance level, is: “All statements in this report have undergone statistical testing, and all comparisons are significant at the 10-percent level unless otherwise noted.”

²See also the Census Bureau Standard: Minimal Information to Accompany Any Report of Survey or Census Data.

sample and the estimate that would result if the sample were to include the entire population.³

- Discuss the relevant nonsampling errors.
 - Indicate the limitations of the data and how they affect the conclusions that may be drawn. (Ex. 3a-3f)
 - In news releases, state, as a minimum, that the data are subject to sampling (if applicable) and nonsampling error. (Ex. 3g-3i)
 - In tables unaccompanied by text, include appropriate headnotes or footnotes. (Refer to Census Bureau Standard: Describing the Sources and Accuracy of Tabulations and Estimates.)
4. Estimates of the magnitude of sampling error must be made available for all survey estimates and comparisons. Include 90-percent confidence intervals with the point estimates for key survey estimates and comparisons.
- For **all** data items and comparisons, estimates of the magnitude of sampling error must be made available in some form: for example, variances, coefficients of variation, standard errors, generalized variance functions, or by reference to another publication.
 - For **key** data items and comparisons, use 90-percent confidence intervals or margins of error (MOE) to complement point estimates.

The confidence interval should appear in the form of an estimate \pm an appropriate length, or as (lower extreme, upper extreme). The MOE should be displayed as \pm the appropriate length. Whichever measure is used (confidence interval or MOE), it should appear in the text near the estimate, in a footnote, or in a table of estimates.

The confidence coefficient for all intervals or MOEs, 90 percent, should be clearly stated. If the confidence interval for a key data item or comparison equals zero when rounded to the same precision as the estimate, the confidence interval may be replaced by a statement such as “The standard error for this estimate rounds to zero.” (Ex. 4a-4c)

Confidence intervals or MOEs are not required in news releases of household or person data, but are encouraged. However, confidence intervals or MOEs must accompany the economic data estimates listed in Supporting Document B in all products, including news releases.

³ Census Bureau Standard: Definitions for Survey and Census Metadata

Because slides for conference presentations are less formal products, the standard does not require that confidence intervals or MOEs accompany the key estimates.

- In longer reports, if a generalized variance formula is used to estimate standard errors, it should be given. (Ex. 4d)
- Methods to approximate the standard errors of derived statistics, such as estimates of change and ratios of estimates, must be made available. If possible, present or discuss supplementary data needed for this purpose, such as correlations. (Ex. 4e)

5. Indicators of potential nonsampling errors should be provided.

Provide measures of nonresponse, such as the unit rate of nonresponse and the item imputation rates for key data items or characteristics. Discuss coverage of the target population. For short reports, these may be presented in a separate quality profile and incorporated by reference. (Ex. 5a-5f)

Responsibilities

Program areas and the Communications Directorate are responsible for the following:

- The inclusion of requirements to satisfy this Standard in the design, schedule, and budget of new or re-designed statistical activities, programs, or products;
- The implementation of the requirements of this Standard in documents within the scope of the Standard;
- The initiation of evaluations of the application of this Standard within particular program areas and ensuring that such evaluations are coordinated with other program evaluation activities; and
- The submission to the Census Bureau Methodology and Standards Council of applications for exemption from the requirements of this Standard.

The Methodology and Standards Council will be responsible for the following:

- The initiation of a review of this Standard when deemed necessary;
- The review and approval of applications for exemption from the requirements of the Standard; and
- Providing guidance to program areas in the development and usage of the standards.

Inquiries

Direct all questions related to the interpretation of this Standard to the Census Bureau's Methodology and Standards Council.

Supporting Documents:

- A. Illustrative Examples of Standard
- B. Data Items Relevant to Requirement 1

Recommended by the Census Bureau Methodology and Standards Council:

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