2011 Annual Survey of Local Government Finances Methodology

The U.S. Census Bureau conducts an Annual Survey of Local Government Finances, as authorized by Title 13, United States Code, Section 182.

This survey methodology contains information on the data collected for fiscal year 2011.

Population of Interest

The population of interest for this survey contains the 50 state governments and 89,004 local governments (counties, municipalities, townships, special districts, and school districts) and the District of Columbia. In years ending in '2' and '7' the entire universe is canvassed. In intervening years, a sample of the population of interest is surveyed. The survey coverage includes all state and local governments in the United States.

Content of the Survey

For both the census and annual survey, the finance detail data are equivalent, encompassing the entire range of government financial activities - revenue, expenditure, debt, and financial assets. Revenue data include taxes, charges, interest, intergovernmental revenues, and other earnings. Expenditure data include total by function (such as education and police protection) and by character (such as current operations and capital outlays). Debt data include issuance, retirement, and amounts outstanding. Financial assets data include cash and securities holdings, by purpose.

The forms listed below are used to collect the data. The variables collected on these forms are explained in detail in the 2006 Government Finance and Employment Classification Manual. Respondents may reply to these regular 'F' forms questionnaires over the Internet.

Form Number	Survey Name
F28 FY2011	All Counties, Municipalities, and Townships
F29 FY2011	Multi-Function Special Districts
F32 FY2011	Single Function Special Districts
F42 FY2011	School Building Agencies

Sample Design

The 2011 sample for the Annual Survey of Local Government Finances was selected from the 2007 Census of Governments. It was designed to produce state by level of government estimates with a coefficient of variation of 3.0 percent or less for long-term debt, total revenue, and total expenditure. The sample will produce state and local government estimates with a coefficient of variation of 5.0 percent or less on the following 11 major finance items: long-term debt, total revenue, total expenditure, criminal justice, education, highways, health/hospitals, housing, capital outlay, utilities, and welfare. The sample included all independent schools since their data were obtained from other education surveys. The sampled units were first stratified by state and government types. In each stratum, the units were selected by Probability Proportion to Size (PPS) without replacement. The size variable was defined as the maximum of Revenues, Expenditures, Debt, and Assets. All state governments were included in the sample. The sample was adjusted as follows:

- Births of general purpose governments and independent schools since the completion of the 2007 Annual Survey of Local Government Finance processing cycle that have been identified on the sampling frame were all added to the sample and assigned a weight of 1.0000.

- Births of special district governments that met initial certainty criteria were also included with a weight of 1.0000. All other special district government births were sampled at a rate of 1 in 25.

- Deaths (dis-incorporated units) since the completion of the 2010 Annual Survey of Local Government Finances processing cycle were removed from the sample.

The initial certainty criteria for the 2011 sample were as follows:

- All county governments with a 2007 population of 100,000 or more
- All cities with a 2007 population of 75,000 or more.
- All townships in New England and the Middle Atlantic states with a population of 50,000 or more.
- All special districts meeting any of the following three conditions:

    1. Full-time equivalent employment of 1,000 or more;

    2. A function code of 42(Mortgage Credit), 92(Electric Power), 93(Gas Supply), or 94 (Transit);

    3. Either $20+ million of total revenue or expenditure.

- Special districts that are the only special district for a state and specific function code.

A modified cut off sampling methodology was used to reduce the number of small governments in the sample, thus reducing respondent burden and processing costs. Research on the new

methodology, which was also used for the Annual Survey of Public Employment and Payroll, is available in a series of papers on http://www.census.gov/govs/pubs/

Sample Frame:

The sampling frame for the 2011 Annual Survey of Local Government Finances was the 2007 Census of Local Governments file, updated by births and deaths in each year since that time. All types of governments were included in the sample frame.

Weighting

The weight for each unit in the sample is the inverse of that unit's probability of being selected into the sample. For example, for units that were included in the sample with a probability of .0200, the weight is (1/.0200) =50.0000.

Sample Size

The sample size was 10,824 non-school units. Of the total number of governments in the non-school sample, 16.5% were counties, 32.7% were cities, 9.8% were townships, 41.1% were special districts. All 50 state governments, the District of Columbia, and independent school districts were certainty units with a weight of 1.0000.

Data Collection

Data collected for the Annual Survey of Local Government Finances are public record and are not confidential, as authorized by Title 13, United States Code, Section 9. Data for this survey were collected using the forms listed in the Content of the Survey section and through state government administrative records.

The data collection for the state and local finance survey is made up of three modes to obtain data: mail canvass, Internet collection, and central collection from state sources. Collection methods vary by state and type of government.

Reviews of government accounting records provide data for most state government agencies and the 48 largest and most complex county and municipal governments. Data for local governments in about 28 states are consolidated and submitted by state agencies (central collections), usually as electronic transmissions or mutually developed questionnaires. Each of these central collection arrangements is unique, conforming to our and the states' requirements.

Data for the balance of local governments were obtained via mail questionnaires sent directly to county, municipal, township, special district, and school district governments.

In some cases the data from central collections and mail canvass procedures were incomplete or questionable. If Census Bureau analysts were unable to obtain corrected data from original sources, they attempted to obtain data from Comprehensive Annual Financial Reports (CAFRs).

In many instances, supplied/compiled data are supplemented with secondary sources, such as debt information from Mergents.

The survey combines data from several government finance surveys, including the 2011 State Government Finances, 2011 State and Local Public Employee-Retirement Systems, and the 2011 Public Elementary-Secondary Education Finances.

Note: All governments that received a mail questionnaire had the option of submitting their response via the Internet.

The following are important dates in the data collection process for fiscal year 2011:

September 2011	Initial mail-out
November 2011	Reminder letter mailed out
January 2012	Follow up mail-out
March - May 2012	Telephone follow-up

Data Processing

Editing:

Editing is a process that tries to ensure the accuracy, completeness, and consistency of the survey data. Efforts are made at all phases of collection, processing, and tabulation to minimize reporting, keying, and processing errors.

Although some edits are built into the Internet data collection instrument and the data entry programs, the majority of the edits are performed post collection. Edits consist primarily of four types: (1) *consistency edits*, (2) *historical ratio edits* of the current year's reported value to the prior year's value, (3) *current year ratio edits*, and (4) *balance checks*.

The *consistency edits* check the logical relationships of data items reported on the form. For example, if interest on debt is reported, then there must be debt.

The *historical ratio edits* compare data for the current year to data for the prior year or prior census year. If data fall outside of acceptable tolerance levels, the item is flagged for further review. For example, the reported property tax for the current year may be compared against the property tax last year, if the reporting unit was in last year's sample. If it was not in last year's sample, the current year value is compared to the prior census year value.

The *current year ratio edits* compare one data item on the form against a different data item. If data fall outside of acceptable tolerance levels, the item is flagged for further review. For example, airport expenditure to airport revenue is a current year ratio.

Balance checks are checks of linear relationships that exist in the data. Debt flow is an example of a *balance check*. The ending debt must equal the beginning debt plus the debt issued minus the debt retired.

After all data are edited and imputed, they are aggregated. A macro-edit, or aggregate-level, review is conducted with current year state aggregates compared to prior year and prior census

aggregates. Macro-level ratio edits and tolerance levels were developed using the current year data.

For the *ratio edits, consistency edits, balance checks, and macro edits*, the edit results are reviewed by analysts and adjusted as needed. When the analyst is unable to resolve or accept the edit failure, contact is made with the respondent to verify or correct the reported data. The results of the action are tracked with a data edit flag.

Imputation:

Not all respondents answer every item on the questionnaire. There are also questionnaires that are not returned despite efforts to gain a response. Imputation is the process of filling in missing or invalid data with reasonable values in order to have a complete data set for analytical purposes. For census years, the complete data set is also needed for sample design purposes.

For non-responding general purpose governments, imputations for missing units are based on recently reported historical data from either a prior year annual survey or the most recent census, adjusted by a growth rate. If no historical data are available, data from a randomly selected similar unit are adjusted by the ratio of the populations of the non-responding and randomly selected donor governments.

The imputations for non-responding special districts are done similarly. If prior year reported data are available, the prior year data for the non-respondent are adjusted by a growth rate that is determined from reporting units that are similar to the non-respondent. Special districts are similar if they are of the same function code and similar geography, e.g., police protection in a state or water transport in a region. For non-responding special districts with no recently reported data available, data are used from a randomly selected donor that is similar to the non-respondent. In cases where good secondary data sources exist, the data from those sources are used.

For individual questionnaire items that are not reported by general-purpose governments or dependent and independent school districts, either data from another source, pro-rating of totals, or prior year data are used to give a complete dataset.

Note: Between years 2002 through 2006, individual government imputed data were not released to the public. For 2007 through 2011, individual unit data are available upon request. The data carry imputation and edit flags to help the users determine the usability of the data for their purposes.

Estimation:

After the data were edited and imputed, the estimates were calculated using a calibration method. For most capital outlay variables, a Horvitz-Thompson estimator was used. Downloadable and viewable files of the final estimates are available on the website.

Variance:

Data that are derived from the annual sample survey are subject to sampling error. The statistics in this report that are based wholly or partly on data from the sample are apt to differ from the results of a census covering all governments. Estimates based on a sample survey are subject to sampling variability. The particular sample used is one of a large number of all possible samples of the same size that could have been selected using the same sample design. Each of the possible samples would yield somewhat different results.

The standard error is a measure of the variation among the estimates from all possible samples and thus is a measure of the precision with which an estimate from a particular sample approximates the average results of all possible samples. A bootstrap variance estimator is used to estimate the variance for the 2011 Annual Survey of Local Government Finances. Each viewable table contains a column that gives users the coefficients of variation (or relative standard error) that have been computed for these estimates. The coefficient of variation is the estimated standard error expressed as a percent of the estimated total or proportion.

State government financial statistics result from a complete canvass of all state government agencies. Consequently, there is no associated measure of sampling error, such as the coefficient of variation. However, these statistics are subject to non-sampling error. Such error includes inaccuracies in classification, coverage, and processing.

Although efforts were made at all phases of collection, processing, and tabulation to minimize errors, the data were still subject to errors from imputing for missing data, errors from miscoding, and errors in coverage. Every effort was made to keep such errors to a minimum through examining, editing, and tabulating the data.

The CVs (coefficient of variation) presented in tables can be used to derive the standard error of the estimate. The standard error can then be used to derive interval estimates with prescribed levels of confidence that the interval includes the average results of all samples:

a. intervals defined by one standard error above and below the sample estimate will contain the true value about 68 percent of the time;

b. intervals defined by 1.6 standard errors above and below the sample estimate will contain the true value about 90 percent of the time;

c. intervals defined by two standard errors above and below the sample estimate will contain the true value about 95 percent of the time.

The user can calculate the standard error by multiplying the CV presented in the tables by the corresponding estimate. The CVs presented in the tables are in percentage form and must be divided by 100 before being multiplied by the estimate. This standard error estimate can then be used to get a 90 percent interval estimate by multiplying it by 1.6 and adding the result to the estimated total to get the upper bound and subtracting it from the estimated total to get the lower bound.

Non-sampling Error

Although every effort (as described in the Data Processing section) is made in all phases of collection, processing, and tabulation to minimize errors, the data are subject to non-sampling errors such as inability to obtain data for every variable from all units in the population of interest, inaccuracies in classification, response errors, misinterpretation of questions, mistakes in keying and coding, and coverage errors.

Overall Unit Response Rate

The overall unit response rate to the 2011 Annual Survey of Local Government Finances was 93.1 percent. All of the 50 state governments responded to the survey. In determining the unit response rate, a unit was determined to be a respondent if it provided information on at least one variable or if a CAFR was available. This unit response rate was calculated for each state as well as for the total U.S., and provides the percentage of the units in the eligible universe that actually responded to the survey.

Total Quantity Response Rate

The total quantity response rate was calculated for certain key variables for each state. This response rate is computed separately for each key variable by summing the data provided by the respondents for the key variable and dividing this sum by the sum of the respondent data and the imputed data for the key variable; the result is multiplied by 100.

Note: The total quantity response rates for 2009 – 2011 may not be comparable to previous years for debt and assets due to a change in the way the total quantity response rates are calculated for those items. The total quantity response rate for debt includes only total long term debt outstanding, and the total quantity response rate for assets includes other cash and investments only.

Response Rate Table

The following unit response rates for 2011 are available in downloadable Excel file:

- Local Government Response Rates – Unit Response Rates by state for local governments.

The following total quantity response rates for 2011 are available in downloadable Excel files:

- Local Total Quantity Response Rates – Percentage of the total local estimates of debt, revenues, expenditures, and assets that was reported.

- State and Local Total Quantity Response Rates – Percentage of the total state and local estimates of debt, revenues, expenditures, and assets that was reported.