

2017 Census of Governments: Employment Methodology

The survey measures the number of state and local civilian government employees and their gross payroll for the pay period including March 12, 2017.

The U.S. Census Bureau currently produces the Census of Governments quinquennially for the years ending in “2” and “7”. For 2017, all of the over 90,000 state and local governments were surveyed.

Population of Interest

The population of interest for the 2017 Census of Governments: Employment includes the civilian employees of all agencies of the 50 U.S. state governments, and approximately 91,000 local governments (i.e., counties, municipalities, townships, special districts, and school districts), including the District of Columbia.

Content of the Survey

The survey provides state and local government full- and part-time employment, part-time hours worked, full-time equivalent employment, and payroll statistics by governmental function, such as financial administration, other government administration, judicial and legal, police protection (persons with power of arrest and other police protection), fire protection (firefighters and other fire protection), corrections, highways, air transportation, water transport and terminals, public welfare, health, hospitals, social insurance administration, solid waste management, sewerage, parks and recreation, housing and community development, natural resources, water supply, electric power, gas supply, transit, elementary and secondary education (instructional and other elementary and secondary education), higher education (instructional and other higher education), other education, libraries, and state liquor stores.

The questionnaires that were used to collect these data can be viewed on the [Questionnaires](#) page of the Annual Survey of Public Employment & Payroll Website.

Critical definitions include the following:

Employment: Employment refers to all persons gainfully employed by and performing services for a U.S. government, excluding the federal government employees.

Employees: State and local government employees include all persons (excluding federal employees) paid for personal services performed, including persons paid from federally funded programs, paid elected or appointed officials, persons in a paid leave status, and persons paid on a per meeting, annual, semiannual, or quarterly basis. Unpaid officials, pensioners, persons whose work

is performed on a fee basis, and contractors and their employees are excluded from the count of employees.

Full-time employees: Full-time employees are defined to include those persons whose hours of work represent full-time employment in their employing government.

Part-time employees: Part-time employees are those persons who work less than the standard number of hours for full-time work in their employing government.

Full-time equivalent: Full-time equivalent (FTE) is a computed statistic representing the number of full-time employees that could have been employed if the reported number of hours worked by part-time employees had been worked by full-time employees. This statistic is calculated separately for each function of a government by dividing the "part-time hours paid" by the standard number of hours for full-time employees in the particular government and then adding the resulting quotient to the number of full-time employees.

Payroll: Payroll amounts represent gross payrolls for the 1-month period of March (31 days). The gross payroll include all salaries, wages, fees, commissions, bonuses, or awards paid to employees during the pay period that includes the date of March 12. Payroll amounts reported for a period other than 1-month are converted to represent an amount for the month of March. All payroll figures are represented in current whole dollars and have not been adjusted for inflation.

Conversion of a reported payroll to a payroll amount that would have been paid during a 31-day month is accomplished by multiplying the reported payroll by an appropriate factor. For example, a 2-week payroll is multiplied by the ratio of 31/14, a 1-week payroll is multiplied by the ratio of 31/7, and a twice-a-month payroll is multiplied by 2.

Part-time hours: These data represent the number of hours worked by part-time employees during the pay period. Note: These data are not collected for publication but rather are used to calculate full-time equivalent employment data.

Data Collection

Confidentiality

The data that are collected in this survey are public record and are not confidential¹.

¹ Title 13, United States Code, Section 9(b).

Dates of Collection

The following are important dates in the data collection process:

March 2017	Initial contact
May-September 2017	Follow-up activities

Methods

Data in these files are based on information obtained in the Census of Governments: Employment. 45 of the state governments provided data from central payroll records for all or most of their agencies/institutions. Data for agencies and institutions for the remaining state governments were obtained by mail canvass questionnaires. Local governments were also canvassed using a mail questionnaire. However, elementary and secondary school system data in Delaware, Florida, North Dakota and Washington were obtained from files provided by their respective state governments.

Data Processing

Editing

Editing is a process that tries to ensure the accuracy, completeness, and consistency of 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 two types: (1) *consistency edits* and (2) *ratio edits*.

The *consistency edits* check the logical relationships of data items reported on the form. For example, if a value exists for employees for a governmental function then a value must exist for payroll also. If part-time employees and payroll are reported then part-time hours must be reported and vice versa.

For each function reported for the employees, the *ratio edits* compare data for the number of employees and the average salary for the function between reporting years. If data fall outside of acceptable tolerance levels, the item is flagged for review.

For *ratio edits* and *consistency 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.

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 values obtained from pre-specified statistical methodologies in order to have a complete data set for tabulating state and national totals.

For nonresponding general purpose governments, dependent and independent school districts, and for special district governments, the imputations were based on recent historical data from either a prior year annual survey or the 2012 Census of Governments: Employment, if available. These data were adjusted by a growth rate that was determined by the growth of responding units that were similar (in size, geography, and type of government) to the nonrespondent. If there were no recent historical data available, the imputations were based on the data from a randomly selected responding donor that was similar (based on the same criteria) to the nonrespondent. For general purpose governments, and for dependent and independent school districts, the selected donor's data were adjusted by dividing each data item by the population (or enrollment) of the donor and multiplying the result by the nonrespondent's reported population (or enrollment) data.

Tabulation

After the data were edited and imputed, the 2017 Census of Governments: Employment data were aggregated to yield the viewable and downloadable files that are available on the Website. In the publications for employment statistics, full-time employment, full-time payroll (whole dollars), part-time employment, part-time payroll (whole dollars), full-time equivalent employment, total March full-time and part-time employment, and total March payroll (whole dollars) are published.

Sampling Variability

The data for the census are not subject to sampling and do not contain sampling error, but they are subject to nonsampling error. The user should be mindful that the data for years not ending in '2' or '7' are from sample surveys and are subject to sampling error. Discussions of sampling error are available in the survey methodology descriptions for those years. For any comparisons of census year data to a sample year, the data user must perform hypothesis tests using the survey year's sampling errors.

Data Quality

Nonsampling Errors

Although every effort (as described in the Data Processing section) is made in all phases of collection, processing, and tabulation to minimize errors, the sample (and census) data are subject to non-sampling errors (such as nonresponse, measurement, processing, adjustment and coverage errors). These errors may both affect the census collection and processing activities and the previous Census of Governments data used to adjust the sample during the estimation phase and used in the imputation process.

Overall Unit Response Rate

Further information about 2017 response rates can be found in the link below.

[2017 Census of Governments: Employment Response Rates and Notice](#) – [PDF, <1.0 MB]

For Further Information:

Barth, Joseph, Yang Cheng, and Carma Hogue. "[Reducing the Public Employment Survey Sample Size](#)," Joint Statistical Meetings, 2009

Cheng, Yang, Casey Corcoran, Joseph Barth, and Carma Hogue. "[An Estimation Procedure for the New Employment Survey Design](#)," Joint Statistical Meetings, 2009

Cheng, Yang, Eric Slud, and Carma Hogue. "[Variance Estimation for Decision-Based Estimators with Application to the Annual Survey of Public Employment and Payroll](#)," Joint Statistical Meetings, 2010

Tran, Bac and Brian Dumbacher. "[An Evaluation of Different Small Area Estimators for the Annual Survey of Public Employment and Payroll](#)," Joint Statistical Meetings, 2014

Tran, Bac and Yang Cheng. "[Application of Small Area Estimation for Annual Survey of Employment and Payroll](#)," Joint Statistical Meetings, 2011