

Revisions in State Establishment-based Employment Estimates Effective January 2014

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Introduction

With the release of the payroll employment estimates for January 2014, nonfarm payroll employment, hours, and earnings data for states and areas were revised to reflect the incorporation of the 2013 benchmarks and the recalculation of seasonal adjustment factors for payroll employment estimates. The revisions affect all not seasonally adjusted data from April 2012 to December 2013, all seasonally adjusted data from January 2009 to December 2013, and select series subject to historical revisions before April 2012. This article provides background information on benchmarking methods, business birth/death modeling, seasonal adjustment of employment data, and details of the effects of the 2013 benchmark revisions on state and area payroll employment estimates.

Benchmark methods

The Current Employment Statistics (CES) program, also known as the payroll survey, is a federal and state cooperative program that provides, on a timely basis, estimates of payroll employment, hours, and earnings for states and areas by sampling the population of employers. Each month the CES program surveys about 144,000 businesses and government agencies, representing approximately 554,000 individual worksites, in order to provide detailed industry level data on employment and the hours and earnings of employees on nonfarm payrolls for all 50 states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and about 400 metropolitan areas and divisions.¹

As with data from other sample surveys, CES payroll employment estimates are subject to both sampling and nonsampling error. Sampling error is an unavoidable byproduct of forming an inference about a population based on a limited sample. The larger the sample is, relative to the population, the smaller the sampling error. The sample-to-population ratio varies across states and industries. Nonsampling error, by contrast, generally refers to errors in reporting and processing.²

In order to control both sampling and nonsampling error, CES payroll employment estimates are benchmarked annually to employment counts from a census of the employer population. These counts are derived primarily from employment data provided in unemployment insurance (UI) tax reports that nearly all employers are required to file with state workforce agencies. The UI tax reports are collected, reviewed, and edited by the staff of the BLS Quarterly Census of Employment and Wages (QCEW).³ As part of the benchmark process for benchmark year 2013, census-derived employment counts replace CES payroll employment estimates for all 50 States and the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and about 400 metropolitan areas and divisions for the period of April 2012 to September 2013.

UI tax reports are not collected on a timely enough basis to allow for replacement of CES payroll estimates for the fourth quarter, October 2013 to December 2013. For this period, estimates based on existing sample information are revised using the new series level from census-derived employment counts and updated business birth/death factors.⁴

Special notice regarding industry reclassifications

Each first quarter, the QCEW program incorporates updated industry assignments as they improve their classifications of establishments. Usually reclassifications are spread among industries. In 2013, substantial changes were made to two industries in particular: services for the elderly and persons with disabilities and funds, trusts, and other financial vehicles.

¹ Further information on the sample size for each state is available at www.bls.gov/sae/sample.htm.

² Further information on the reliability of CES estimates is contained in the Technical Note of the latest Regional and State Employment and Unemployment press release and is available at www.bls.gov/sae/news.htm.

³ Further information on the BLS Quarterly Census of Employment and Wages program is available at www.bls.gov/cew/.

⁴ Further information on the monthly estimation methods of the CES program can be found in Chapter 2 of the *BLS Handbook of Methods* and is available at www.bls.gov/opub/hom/pdf/homch2.pdf.

Prior to 2013, UI records from several state-funded programs that provide nonmedical, home-based services for the elderly and persons with disabilities were incorrectly classified under the North American Industry Classification System (NAICS) code for private households (NAICS 814110), which is out of scope for the CES program. As of the first quarter 2013, this employment is now coded in services for the elderly and persons with disabilities (NAICS 624120), which is in scope. The introduction of employment due to a coding change would create large, noneconomic breaks in CES time series data. To prevent these breaks and to properly allocate historic employment, CES worked with QCEW microdata and information from the affected states to reconstruct the histories of the affected series.

Six states were most affected by the reclassification of data in NAICS 624120: California, Massachusetts, Missouri, Nebraska, Texas, and Washington. Education and health services series in these states, and all of the series that include them, are subject to historical reconstructions. (See exhibit 2.)

In a similar reclassification, employment was largely removed from NAICS 525: funds, trusts and other financial vehicles. QCEW staff determined that, because establishments in this classification are legal entities with very little employment, they should be reclassified according to each establishment's primary economic activity. When necessary, series were historically reconstructed to prevent the appearance of economic changes when the underlying cause was noneconomic. The effects of this reclassification were much smaller than those seen with NAICS 624120 and limited to states and areas with detailed level financial services series. Nearly all affected employment remained within the financial services sector, affecting mostly series containing NAICS 522, 523, and 524 but leaving aggregate series largely unaltered.

Business birth/death modeling

Sample-based estimates are adjusted each month by a statistical model designed to reduce a primary source of nonsampling error: the inability of the sample to capture employment growth generated by new business formations on a timely basis. There is an unavoidable lag between an establishment opening for business and its appearance in the sample frame making it available for sampling. Because new firm births generate a portion of employment growth each month, nonsampling methods must be used to estimate this growth.

Earlier research indicated that, while both the business birth and death portions of total employment are generally significant, the net contribution is relatively small and stable. To account for this net birth/death portion of total employment, BLS uses an estimation procedure with two components. The first component excludes employment losses due to business deaths from sample-based estimation in order to offset the missing employment gains from business births. This is incorporated into the sample-based estimate procedure by simply not reflecting sample units going out of business, but rather imputing to them the same trend as the other continuing firms in the sample. This step accounts for most of the birth and death changes to employment.⁵

The second component is an autoregressive integrated moving average (ARIMA) time series model designed to estimate the residual birth/death change to employment not accounted for by the imputation. To develop the history for modeling, the same handling of business deaths as described for the CES monthly estimation is applied to the population data. Establishments that go out of business have employment imputed for them based on the rate of change of the continuing units. The employment associated with continuing units and the employment imputed from deaths are aggregated and compared to actual population levels. The differences between the two series reflect the actual residual of births and deaths over the past five years. The historical residuals are converted to month-to-month differences and used as input series to the modeling process. Models for the residual series are then fit and forecasted using X-12 ARIMA software.⁶ The residuals exhibit a seasonal pattern and may be negative for some months. Finally, differences between forecasts of the nationwide

⁵ Technical information on the estimation methods used to account for employment in business births and deaths is available at <http://www.bls.gov/web/empst/cesbd.htm>.

⁶ Further information on the X-12 ARIMA model is available on the US Census Bureau website at <http://www.census.gov/srd/www/x12a/>.

birth/death factors and the sum of the states' birth/death factors are reconciled through a ratio-adjustment procedure, and the factors are used in monthly estimation of payroll employment in 2014. The updated birth/death factors are also used as inputs to produce the revised estimates of payroll employment for October 2013 to December 2013.

Seasonal adjustment

CES payroll employment data are seasonally adjusted by a two-step process. BLS uses the X-12 ARIMA program to remove the seasonal component of month-to-month employment changes. This process uses the seasonal trends found in census-derived employment counts to adjust historical benchmark employment data while also incorporating sample-based seasonal trends to adjust sample-based employment estimates. By accounting for the differing seasonal patterns found in historical benchmark employment data and the sample-based employment estimates, this technique yields improved seasonally adjusted series with respect to analysis of month-to-month employment change.⁷ Seasonally adjusted employment data for the most recent 13 months are published regularly in table D-1.⁸

The aggregation method of seasonally adjusted data is based upon the availability of underlying industry data. For all 50 states, the District of Columbia, and Puerto Rico, the following series are sums of underlying industry data: total private, goods producing, service-providing, and private service-providing. The same method is applied for the Virgin Islands with the exception of goods producing, which is independently seasonally adjusted because of data limitations. For all 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands, data for manufacturing, trade, transportation, and utilities, financial activities, education and health services, leisure and hospitality, and government are aggregates wherever exhaustive industry components are available; otherwise these industries' employment data are directly seasonally adjusted. In a very limited number of cases, the not seasonally adjusted data for manufacturing, trade, transportation, and utilities, financial activities, education and health services, leisure and hospitality, and government do not exhibit enough seasonality to be adjusted; in those cases the not seasonally adjusted data are used to sum to higher level industries. The seasonally adjusted total nonfarm data for all metropolitan statistical areas (MSAs) are not an aggregation but are derived directly by applying the seasonal adjustment procedure to the not seasonally adjusted total nonfarm level.⁹

Variable survey intervals

BLS utilizes special model adjustments to control for survey interval variations, sometimes referred to as the 4 vs. 5 week effect, for all nonfarm seasonally adjusted series. Although the CES survey is referenced to a consistent concept, the pay period including the 12th day of each month, inconsistencies arise because there are sometimes 4 and sometimes 5 weeks between the week including the 12th day in a given pair of months. In highly seasonal industries, these variations can be an important determinant of the magnitude of seasonal hires or layoffs that have occurred at the time the survey is taken.¹⁰

Combined Areas

BLS currently publishes both seasonally and not seasonally adjusted total nonfarm data for 12 combined areas. For the 2013 benchmark, rather than directly and independently applying the seasonal adjustment factors to the combined areas as in the previous years, the seasonally adjusted data for these 12 areas is derived by summing the seasonally adjusted data from each of their contributing metropolitan divisions or nonstandard areas.¹¹ Given the availability of longer sample histories, this change in process maintains methodological consistency since the not

⁷ A list of all seasonally adjusted employment series are available at www.bls.gov/sae/saeseries.htm.

⁸ Table D-1 can be viewed at www.bls.gov/sae/tables.htm.

⁹ A list of BLS standard MSAs is available at <http://www.bls.gov/sae/saeseries.htm>.

¹⁰ For more information on the presence and treatment of calendar effects in CES data, see www.bls.gov/ore/pdf/st960190.pdf.

¹¹ The twelve combined areas include 10 Metropolitan Statistical Areas (MSAs) large enough to be subdivided into metropolitan divisions, the New York-White Plains-Wayne, NY-NJ Metropolitan Division which is subdivided into nonstandard CES areas, and Kansas City, MO-KS MSA which is subdivided into nonstandard CES areas. More information on metropolitan divisions and nonstandard areas is available at <http://www.bls.gov/sae/saemd.htm> and <http://www.bls.gov/sae/saenonstd.htm>, respectively.

seasonally adjusted data of the combined areas are also the sum of their respective components' not seasonally adjusted data. Accordingly, with the 2013 benchmark, BLS has replaced the seasonally adjusted total nonfarm data for the 12 combined areas back to 1990.

Methodological improvements

Implementation of the Probability Sample Redesign in Puerto Rico

With the release of January 2014 preliminary data, the CES program will complete the implementation of its probability sample redesign for all private industries in Puerto Rico. Probability sampling is the internationally recognized standard for sample surveys and has been utilized in all 50 states and the District of Columbia since 2003. Previously, the CES program used a quota-based sampling technique in Puerto Rico, which was potentially subject to non-negligible biases. Probability sampling ensures a proper representation of the universe of nonfarm business establishments through randomized selection techniques.¹²

Benchmark revisions

Revisions by industry

The magnitude of benchmark revisions is commonly gauged by the percentage difference between the sample-based estimates of payroll employment and the revised benchmark payroll employment levels for March of the benchmark year, presently March 2013. The average absolute percentage revision across all states for total nonfarm payroll employment is 0.4 percent for March 2013. This compares to the average of 0.6 percent for the same measure during the five prior benchmark years of 2008 to 2012. For March 2013, the range of the percentage revision for total nonfarm payroll employment across all states is from -0.7 to 2.9 percent. (See table 1a.)

For December 2013, the average absolute percentage revision for state total nonfarm payroll employment is 0.7 percent. The range of the percentage revision for state total nonfarm payroll employment is from -1.2 to 3.7 percent for December 2013. (See table 1a.)

Absolute level revisions provide further insight on the magnitude of benchmark revisions. Absolute level revisions are measured as the absolute difference between the sample-based estimates of payroll employment and the benchmark levels of payroll employment for March 2013. A relatively large benchmark revision in terms of percentage can correspond to a relatively small benchmark revision in terms of level due to the amount of employment in the reference industry.

¹² Further information on the monthly estimation methods of the CES program can be found in Chapter 2 of the *BLS Handbook of Methods* and is available at www.bls.gov/opub/hom/pdf/homch2.pdf.

Table 1a. Percentage differences between state employment estimates and benchmarks by industry, March 2008–March 2013 and December 2013 (all values in percent)

Industry	Mar 2008	Mar 2009	Mar 2010	Mar 2011	Mar 2012 ¹	Mar 2013 ²	Dec 2013 ²
Average absolute percent differences							
Total nonfarm.....	0.4	0.9	0.4	0.5	0.7	0.4	0.7
Mining and logging.....	4.3	6.0	7.5	3.2	4.7	3.7	5.4
Construction.....	2.6	4.0	3.6	3.2	4.4	3.1	3.7
Manufacturing.....	1.3	2.2	1.8	1.4	1.5	1.4	1.7
Trade, transportation, and utilities.....	0.6	1.6	1.2	0.9	1.1	1.0	1.2
Information.....	2.0	3.3	2.3	2.4	3.2	2.2	3.2
Financial activities.....	1.0	1.6	1.8	1.9	2.2	1.6	2.1
Professional and business services.....	1.3	2.2	2.2	1.8	1.9	1.8	2.1
Education and health services.....	0.8	0.8	1.0	0.9	1.4	1.6	1.7
Leisure and hospitality.....	0.9	1.7	1.8	1.9	2.3	1.4	1.4
Other services.....	1.3	1.9	1.9	2.4	2.7	2.1	2.5
Government.....	0.6	0.6	0.8	0.7	1.0	0.7	1.0
Total nonfarm:							
Range.....	-1.4	-3.8	-1.3	-1.8	-1.5	-0.7	-1.2
	to	to	to	to	to	to	to
	1.0	1.1	1.4	1.4	2.2	2.9	3.7
Mean.....	-0.1	-0.8	-0.1	0.2	0.6	0.3	0.4
Standard deviation.....	0.5	0.8	0.5	0.6	0.7	0.6	0.8

¹ CES State and Area payroll employment estimates are typically replaced with census derived employment counts through the third quarter of the benchmark year. However, in the 2011 benchmark year, CES estimates were replaced only through the second quarter of 2011 (through June 2011). As a result, the March 2012 benchmark revisions reflect revisions to cumulatively more months of sample-based estimates than is typical, contributing to generally higher rates of revision. For more information, see <http://www.bls.gov/sae/benchmark2013.pdf>.

² The CES estimates in this column are subject to large revisions and historical reconstructions due to substantial reclassifications by the QCEW program in the Financial activities and Education and health services sectors. For more information, see http://www.bls.gov/news.release/archives/cewqtr_09262013.htm or the section of this article titled “Special notice on industry reclassifications.”

The following example demonstrates the necessity of considering both percentage revision and level revision when evaluating the magnitude of a benchmark revision in an industry. The average absolute percentage benchmark revision across all states for financial activities and for professional and business services are both 2.1 percent for December 2013. However, for December 2013 the absolute level revision across all states for the financial activities industry is 2,200, while the absolute level revision across all states for the professional and business services industry is 5,800. (See table 1b.) Relying on a single measure to characterize the magnitude of benchmark revisions in an industry can potentially lead to an incomplete interpretation.

Table 1b. Level differences between state employment estimates and benchmarks by industry, March 2008–March 2013 and December 2013 (all values payroll employment)

Industry	Mar 2008	Mar 2009	Mar 2010	Mar 2011	Mar 2012 ¹	Mar 2013 ²	Dec 2013 ²
Average absolute numeric differences							
Total nonfarm.....	11,500	20,700	7,600	10,200	14,800	16,900	23,900
Mining and logging.....	600	700	600	500	600	600	900
Construction.....	3,300	3,700	2,900	3,300	4,200	2,700	3,700
Manufacturing.....	2,500	3,200	2,000	2,100	2,200	1,500	1,800
Trade, transportation, and utilities...	2,800	7,800	4,500	2,800	3,900	3,900	4,600
Information.....	1,000	1,300	1,200	1,300	1,500	800	1,600
Financial activities.....	1,800	2,300	2,300	2,600	2,500	2,000	2,200
Professional and business services...	6,200	6,500	4,600	4,700	5,500	4,100	5,800
Education and health services.....	3,100	2,800	2,800	3,000	4,600	12,000	13,000
Leisure and hospitality.....	2,600	3,500	3,500	3,100	5,200	2,900	2,900
Other services.....	1,200	1,900	1,600	1,900	2,300	2,000	2,300
Government.....	2,800	2,200	3,800	3,700	4,100	2,500	4,100
Total nonfarm:							
Range.....	-112,300 to 44,000	-190,500 to 10,900	-38,700 to 28,900	-15,300 to 57,500	-28,900 to 59,400	-13,700 to 428,200	-20,200 to 564,000
Mean.....	-5,100	-19,600	-1,700	6,100	13,100	13,800	19,600
Standard deviation.....	21,000	31,500	11,300	15,300	16,200	60,800	79,600

¹ CES State and Area payroll employment estimates are typically replaced with census derived employment counts through the third quarter of the benchmark year. However, in the 2011 benchmark year, CES estimates were replaced only through the second quarter of 2011 (through June 2011). As a result, the March 2012 benchmark revisions reflect revisions to cumulatively more months of sample-based estimates than is typical, contributing to generally higher rates of revision. For more information, see <http://www.bls.gov/sae/benchmark2013.pdf>.

² The CES estimates in this column are subject to large revisions and historical reconstructions due to substantial reclassifications by the QCEW program in the Financial activities and Education and health services sectors. For more information, see http://www.bls.gov/news.release/archives/cewqtr_09262013.htm or the section of this article titled “Special Notice on Industry Reclassifications.”

Revisions by State

For March 2013, 31 states and the District of Columbia revised nonfarm payroll employment upward, while 19 states revised payroll employment downward. (See table 2 or graph 1.) The 20th, 40th, 60th, 80th, and 100th percentiles for March 2013 revisions were -0.2%, 0%, 0.2%, 0.6%, and 2.9% respectively. (See exhibit 1). The nth percentile means that the corresponding revisions is greater than n percent of the rest. For example, the 80th percentile revision in March 2013 is 0.6%, meaning 80 percent of states had revisions less than 0.6%.

For December 2013, 36 states and the District of Columbia revised nonfarm payroll employment upward, while 14 states revised payroll employment downward. (See table 2 or graph 2.) The 20th, 40th, 60th, 80th, and 100th percentiles for December 2013 revisions were -0.2%, 0.2%, 0.5%, 1.0%, and 3.7% respectively. (See exhibit 1.)

Revisions for the six states that were historically reconstructed to account for the reclassification of employment in NAICS 624120 may be larger than they would have been without any reclassification. An approximation of what the revisions for those states may have been in March 2013 had the data been classified in 624120 prior to the benchmark is shown in exhibit 2. The “Adjusted CES Estimate” column is the CES published final estimate plus the employment that was reclassified. Removing the approximate impact of the reclassification yields revisions that are more comparable to other states. The “Benchmark Revision” numbers come from table 2.

Table 2. Percent differences between nonfarm payroll employment benchmarks and estimates by state, March 2008–March 2013 and December 2013 (all numbers in percent)

State	Mar 2008	Mar 2009	Mar 2010	Mar 2011	Mar 2012	Mar 2013	Dec 2013
Alabama.....	-0.6	-1.1	0.3	-0.1	0.6	0.4	1.2
Alaska.....	0.4	-0.5	-1.3	-0.2	0.8	0.1	1.0
Arizona.....	-0.4	-0.1	-0.3	0.6	0.3	0.3	0.3
Arkansas.....	(1)	-0.3	-0.3	-1.1	1.2	-0.5	-0.8
California.....	-0.3	-1.3	-0.1	(1)	0.3	2.9	3.7
Colorado.....	-0.2	-0.3	0.5	0.7	0.2	0.5	1.0
Connecticut.....	0.5	-0.5	-1.3	(1)	0.6	0.2	0.6
Delaware.....	(1)	0.7	-0.4	0.7	0.1	0.2	0.5
District of Columbia.....	-0.1	-0.6	-0.4	1.4	-0.8	1.1	1.9
Florida.....	-1.4	-1.4	-0.2	0.5	0.5	0.3	0.5
Georgia.....	-0.7	-0.9	0.2	1.4	0.7	(1)	-0.1
Hawaii.....	-0.3	-1.2	-0.5	(1)	0.5	1.0	0.6
Idaho.....	-0.1	-1.2	-0.2	-0.4	0.3	0.2	(1)
Illinois.....	-0.3	-0.3	0.1	(1)	0.7	0.1	-0.1
Indiana.....	-0.6	-1.3	-0.2	0.7	0.7	-0.2	-0.3
Iowa.....	0.1	-0.3	-0.5	-0.2	0.8	-0.1	0.9
Kansas.....	0.5	-0.8	-0.3	1.2	0.9	-0.2	0.4
Kentucky.....	-1.2	-1.3	-0.4	-0.3	-0.1	-0.3	0.2
Louisiana.....	-0.5	-1.4	-0.6	0.9	-1.5	-0.1	0.1
Maine.....	0.3	-0.7	0.3	-0.4	0.3	(1)	0.6
Maryland.....	-0.8	-0.6	-0.1	1.1	-0.2	-0.4	-0.7
Massachusetts.....	0.2	0.1	0.9	0.3	1.3	1.2	1.0
Michigan.....	-0.1	-0.5	0.2	0.2	1.1	0.9	0.7
Minnesota.....	-0.3	-0.1	-0.4	0.8	0.8	(1)	0.5
Mississippi.....	(1)	-1.2	-0.1	-0.4	1.1	-0.7	-0.8
Missouri.....	0.1	-1.1	-0.5	-0.4	0.4	1.1	1.1
Montana.....	-0.4	-2.4	0.2	-0.7	2.1	0.6	0.5
Nebraska.....	-0.8	0.1	-0.2	-0.6	1.5	1.3	1.0
Nevada.....	-0.9	-3.8	-0.6	-0.1	0.4	0.5	1.5
New Hampshire.....	-1.2	-1.5	-0.7	(1)	0.8	(1)	0.4
New Jersey.....	0.4	-1.2	-0.1	-0.2	0.3	-0.1	-0.5
New Mexico.....	(1)	-1.6	-0.1	(1)	-0.2	0.2	0.2
New York.....	0.3	-0.4	0.3	0.7	(1)	(1)	0.3
North Carolina.....	-0.3	-0.1	(1)	0.8	0.3	-0.3	0.1
North Dakota.....	1.0	-0.9	0.8	0.3	2	-0.2	-0.9
Ohio.....	-0.7	-0.5	(1)	-0.3	0.6	0.9	1.2
Oklahoma.....	0.7	-1.2	0.1	(1)	1.5	0.4	0.6
Oregon.....	-0.4	-1.3	0.1	-0.3	0.7	0.2	0.7
Pennsylvania.....	0.1	-0.4	0.3	0.3	0.4	(1)	-0.1
Rhode Island.....	0.2	-0.3	1.4	(1)	1.7	0.4	0.3
South Carolina.....	-0.3	-1.4	-1.2	0.3	0.3	0.2	0.7
South Dakota.....	0.1	-0.4	-0.1	0.5	1.4	-0.1	-0.9
Tennessee.....	0.2	-1.3	(1)	0.7	0.8	-0.2	0.1
Texas.....	0.4	-0.7	(1)	-0.1	0.5	(1)	0.3
Utah.....	-0.9	-1.9	-0.5	0.2	0.9	-0.2	1.1
Vermont.....	-0.1	1.1	0.1	-1.8	0.5	0.1	-0.6
Virginia.....	-0.1	-0.4	(1)	0.5	0.1	0.3	-0.2
Washington.....	0.3	-0.6	-0.7	0.1	0.1	1.9	2.1
West Virginia.....	0.1	0.8	0.8	0.4	1	-0.7	-1.2
Wisconsin.....	0.5	0.4	0.7	0.1	2.2	0.6	0.3
Wyoming.....	0.6	-1.5	-0.1	0.1	1	0.4	(1)

(1) Less than +/- 0.05 percent

Exhibit 1. Percentiles of Percent Revisions March 2013 and December 2013 (all values in percent)

Percentiles of Percent Revisions	March	December
	2013	2013
20th percentile.....	-0.2	-0.2
40th percentile.....	0.0	0.2
60th percentile.....	0.2	0.5
80th percentile.....	0.6	1.0
100th percentile.....	2.9	3.7

Exhibit 2. Estimated effect of NAICS 624120 reclassification on March 2013 benchmark revisions (all values in percent)

State	March 2013 Benchmark Revision	March 2013 Adjusted CES Estimate Revision
California.....	2.9	0.5
Massachusetts.....	1.2	0.3
Missouri.....	1.1	0.5
Nebraska.....	1.3	0.7
Texas.....	(1)	-0.1
Washington.....	1.9	0.5

(1) Less than +/- 0.05 percent

Revisions by metropolitan statistical areas (MSAs)

For metropolitan statistical areas (MSAs) published by the CES program, the percentage revisions ranged from -5.3 to 8.1 percent, with an average absolute percentage revision of 1.2 percent across all MSAs for March 2013.¹³ (See table 3a.) Comparatively, at the statewide level the range was -0.7 to 2.9 percent, with an average absolute percentage revision of 0.4 percent for March 2013. (See table 1a.) As MSA size decreases so does the sample size, resulting in larger relative standard errors and therefore increasing both the range of percent revisions and the average absolute percent revision. Metropolitan areas with 1 million or more employees during March 2013 had an average absolute revision of 1.1 percent, while metropolitan areas with fewer than 100,000 employees had an average absolute revision of 1.4 percent. (See table 3a.)

For December 2013, the percentage revisions ranged from -5.7 to 9.6 percent, with an average absolute percentage revision of 1.6 percent across all MSAs. (See table 3b.) Comparatively, at the statewide level the range was -1.2 to 3.7 percent, with an average absolute percentage revision of 0.7 percent for December 2013. (See table 1a.) As noted previously, both the range of percentage revisions and the average absolute percentage revision generally increase as the amount of employment in an MSA decreases. Metropolitan areas with 1 million or more employees during December 2013 had an average absolute revision of 1.3 percent, while metropolitan areas with fewer than 100,000 employees had an average absolute revision of 1.8 percent. (See table 3b.)

¹³ The CES program published employment series for 372 MSAs in 2013. This number excludes metropolitan divisions and Puerto Rico. A list of BLS standard MSAs is available at <http://www.bls.gov/sae/saeseries.htm>.

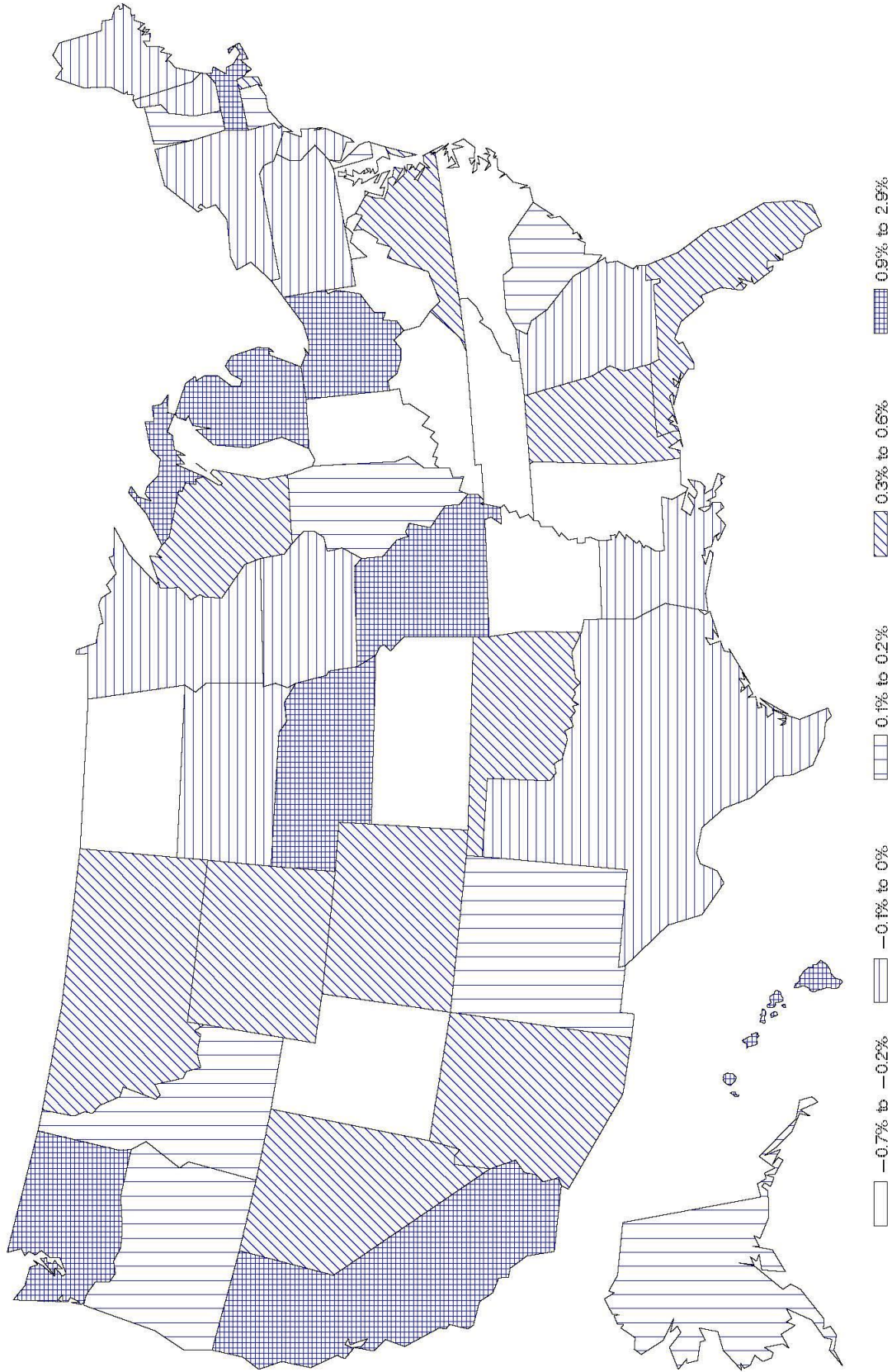
Table 3a. Benchmark revisions for nonfarm employment in metropolitan areas, March 2013

Measure	All MSAs	MSAs grouped by level of total nonfarm employment			
		Less than 100,000	100,000 to 499,999	500,000 to 999,999	1 million or more
Number of MSAs.....	372	181	140	25	26
Average absolute percentage revision.....	1.2	1.4	1.1	0.8	1.1
Range.....	-5.3 to 8.1	-5.3 to 8.1	-2.8 to 5.6	-1.1 to 3.8	-1.4 to 4.0
Mean.....	0.4	0.3	0.3	0.6	0.8
Standard deviation.....	1.6	1.8	1.4	1.1	1.4

Table 3b. Benchmark revisions for nonfarm employment in metropolitan areas, December 2013

Measure	All MSAs	MSAs grouped by level of total nonfarm employment			
		Less than 100,000	100,000 to 499,999	500,000 to 999,999	1 million or more
Number of MSAs.....	372	181	140	25	26
Average absolute percentage revision.....	1.6	1.8	1.4	1.1	1.3
Range.....	-5.7 to 9.6	-5.7 to 9.6	-3.8 to 7.3	-1.3 to 3.6	-1.8 to 5.6
Mean.....	0.6	0.7	0.4	0.9	0.9
Standard deviation.....	2.0	2.3	1.9	1.3	1.7

Graph 1. Percent differences between nonfarm payroll employment benchmarks and estimates by State, March 2013



Graph 2. Percent differences between nonfarm payroll employment benchmarks and estimates by State, December 2013

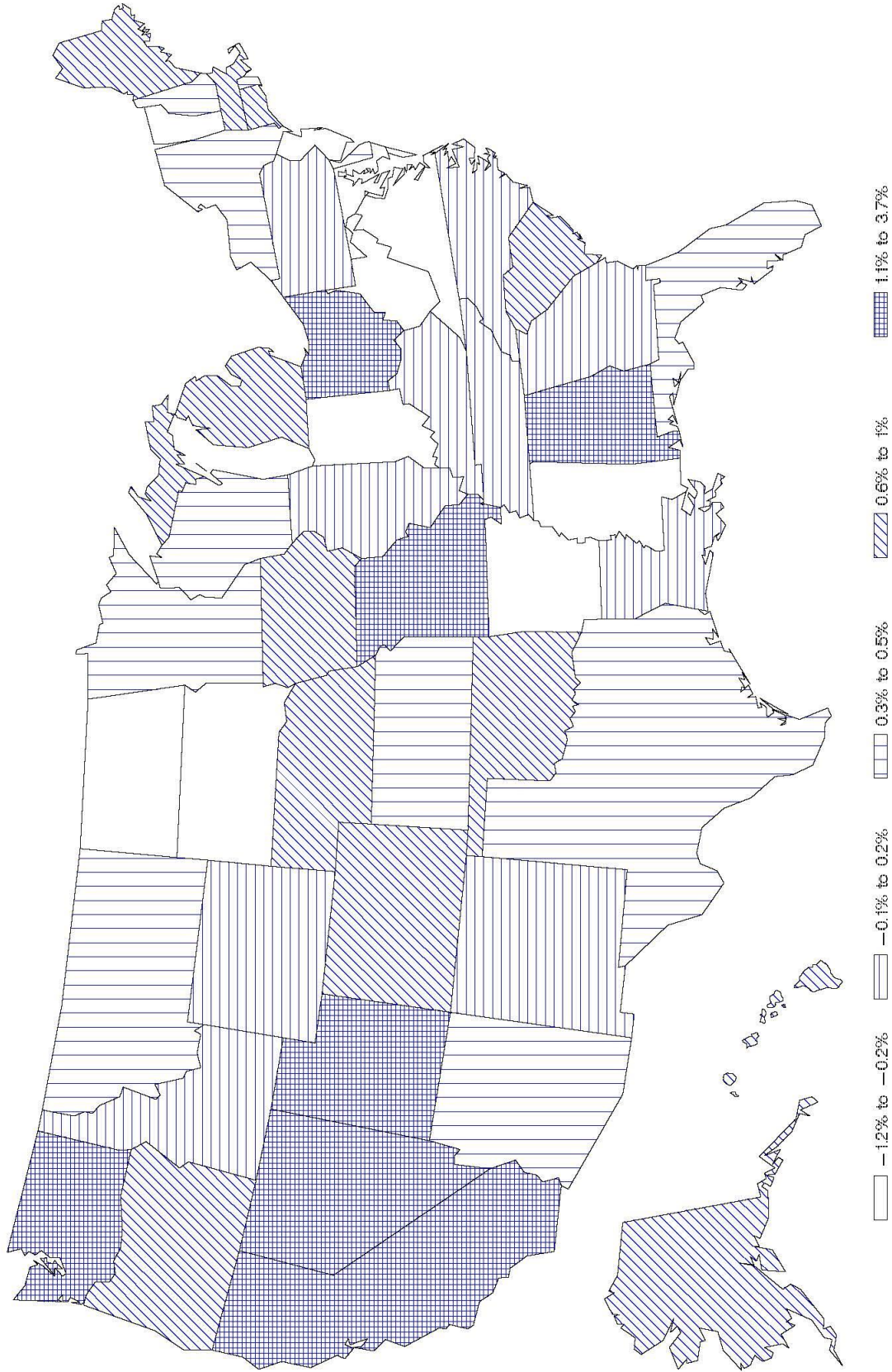


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Additional information

Historical state and area employment, hours, and earnings data are available on the BLS internet website at the following URL: www.bls.gov/sae. Users may access data by use of retrieval tools available on the BLS internet website. Inquiries for additional information on the methods or estimates derived from the CES survey should be sent by email to sminfo@bls.gov. Assistance and response to inquiries by telephone is available by dialing (202) 691-6559 during the hours of 8:30 am to 4:30 pm EST and Monday through Friday.