Revisions in State Establishment-Based Employment Estimates Effective January 2003

Brian Dahlin

With the release of estimates for January 2003, nonfarm payroll employment, hours, and earnings data for States and areas (tables B-7, B-14, and B-18) were revised to reflect the incorporation of March 2002 benchmarks and the recomputation of seasonal adjustment factors (State estimates). The revisions affect unadjusted data at all industry levels from January 2001 forward. These revisions also coincide with the completion of the Current Employment Statistics (CES) survey sample redesign at the State and area level; probability-based sampling now is used instead of quota-based sampling. The release of January 2003 data also saw the initial publication of State and area estimates under the 2002 North American Industry Classification System. Additional revisions to data prior to January 2001 resulted from the of introduction of NAICS. Detailed descriptions of the CES sample redesign and the implementation of NAICS were published in the March 2003 issue of this publication.[1] This article offers detailed information on the effects of the March 2002 benchmark revisions and addresses issues regarding the comparability of NAICS employment estimates with those previously published using the Standard Industrial Classification (SIC) system.

March 2002 benchmark

The Current Employment Statistics survey, or nonfarm payroll survey, is a Federal/State cooperative program that provides employment, hours, and earnings estimates for States and areas on a timely basis by estimating the number of jobs in the population from a sample of that population. As in the case of other sample surveys, estimates from the CES survey are subject to both sampling and nonsampling error. Sampling error is an unavoidable byproduct of forming an inference about a population based on a 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 is not unique to sample surveys, as it includes errors in reporting and processing.

To help control for sampling and nonsampling error, the estimates are benchmarked annually to universe employment counts. These counts are derived primarily from employment data reported on unemployment insurance (UI) tax reports that nearly all employers are required to file with State Employment Security Agencies. Benchmark levels replace the original sample-based estimates from the previous year through March of the benchmark year. For the current 2002 benchmark, estimates from January 2001 to March 2002 were replaced with UI-based universe counts. Once the new level for January 2001 had been determined, the appropriate sample links were applied to the new level, and the estimates were recalculated for February 2001 forward. The sample links capture the over-the-month change of the sample estimates. A sample link for a given month is calculated by dividing employment reported by survey respondents for that month by employment reported by those same respondents for the previous month. The links used during the benchmark process may differ slightly from those used to derive the original estimates because they include data from respondents that reported too late for inclusion in the previously published estimates. This process was completed and the revised data were released with the January 2003 estimates.

Improvements in the timeliness of UI data and in the standardization of State operations have enabled nearly all States to replace estimates with UI data beyond March of the benchmark year. In the March 2002 benchmark, 26 States and the District of Columbia used third-quarter 2002 UI data (that is, through September 2002) in their benchmarking, and 24 States used second-quarter 2002 UI data (through June 2002). Recalculated sample links were then applied to these new levels to derive revised estimates for months occurring after the replacement quarter.

The percentage differences between March 2002 sample-based estimates and the revised March 2002 benchmark levels are commonly used to report the magnitude of the revisions. The average absolute percentage revision for State total nonfarm estimates is 0.9 percent for March 2002, up from 0.7 percent in March 2001. The average absolute

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[1] For additional information regarding revisions to CES State and area estimates and the conversion to NAICS, see Molly E. Barth, "Revisions to the Current Employment Statistics State and Area Estimates Effective January 2003," *Employment and Earnings*, March 2003.

revision from 1997 to 2002 is 0.6 percent. The range of the percentage revisions for the States at the total nonfarm level was from -2.1 percent to 2.1 percent in 2002.

For the 2002 benchmark, benchmark revisions at industry levels are not reported because of the conversion from SIC to NAICS. Comparisons at the industry level will resume with the introduction of the March 2003 benchmark scheduled to be released in March 2004. In the interim, benchmark revisions are examined at the total nonfarm level only. (See table 1.)

The direction of the revisions indicates whether the March 2002 benchmark levels were greater or less than the original sample-based estimates. Historically, State estimates have understated March employment levels during periods of economic growth and overstated these levels during periods of economic decline. For the current benchmark, 8 States and the District of Columbia revised total nonfarm employment estimates upward, while 41 States had downward revisions. (See table 2.) The widespread overestimation of employment is reflected by the mean -0.6-percent revision across all States for total nonfarm employment.

Among metropolitan statistical areas (MSAs) for which estimates are published by the CES program, the range of percentage revisions is from -4.7 to 5.0 percent, with an average absolute percentage revision of 1.3 percent across all MSAs.[2] This compares with a range of -2.1 to 2.1 percent and an average absolute percentage revision of 0.9 percent at the State level. Generally, as MSA size decreases, the range of percentage revisions increases, as does the average absolute percentage revision. (See table 3.)

Additional information

Historical State and area employment, hours, and earnings data are available at **http://www.bls.gov/sae/** on the BLS Internet site. Users may access the data via several retrieval tools at this address. Any questions about how to access the data through the Internet should be directed to *webmaster@bls.gov*. Inquiries for additional information on the methods or estimates derived from the CES survey should be sent to: U.S. Department of Labor, Bureau of Labor Statistics, Room 4860, 2 Massachusetts Avenue, NE., Washington, DC 20212-0001. The telephone number is (202) 691-6559; fax (202) 691-6820. The e-mail address is *sminfo@bls.gov*.

[2] The CES program published employment series for 274 MSAs in 2002. The list of BLS standard MSAs is available at **http://www.bls.gov/sae/**

Table 1. **Differences between State employment estimates and benchmarks by industry, March 1997-2002**

Industry	1997	1998	1999	2000	2001	2002
	Average absolute percentage differences					
Total nonfarm	0.4	0.5	0.5	0.7	0.7	0.9
Mining	4.2	3.1	5.3	4.4	5.4	([1])
Construction	2.4	2.5	2.5	3.3	3.2	([1])
Manufacturing	.8	.8	1.0	1.6	1.1	([1])
Transportation and public utilities	1.4	1.3	1.8	1.7	1.3	([1])
Wholesale and retail trade	.6	.8	.9	1.1	1.4	([1])
Finance, insurance, and real estate	1.3	1.5	1.8	1.4	1.3	([1])
Services	.9	1.0	1.1	1.2	1.2	([1])
Government	.7	.9	.7	.7	.9	([1])
	Average percentage revisions					
Total nonfarm:						
Range	-1.3 : 1.3	-1.2 : 2.5	-1.3 : 1.8	-1.1 : 3.3	-2.9 : 0.9	-2.1 : 2.1
Mean	.2	.1	.1	.4	-.5	-.6
Standard deviation	.5	.7	.6	.8	.7	.9

[1] Due to noncomparability between NAICS and SIC industrial classification below total nonfarm levels, 2001-02 differences are unavailable at the industry level.

NOTE: The range indicates the lowest and highest percentage revision at the total nonfarm level. The mean is the sum of all the items in a series divided by the number of items. The standard deviation is a widely used measure of dispersion. It measures the extent to which the individual items in a series are scattered about the mean of the series and indicates the reliability of the mean. For example, the March 1997 standard deviation (.5) is low, relative to that for March 2002 (.9). This is an indication that there is higher variation among State total nonfarm revisions in March 2002 (that is, the mean is less representative of the group) than in March 1997 (that is, the mean is more representative of the group). The standard deviation is found by taking the difference of each item in a series from the mean of the series, squaring each difference, summing the squared differences, dividing the result by the number of items, and obtaining the square root of that figure.

Table 2. **Percent differences between nonfarm payroll employment benchmarks and estimates by State, March 1997-2002**

State	1997	1998	1999	2000	2001	2002
Alabama	0.6	0.3	-0.9	-1.0	-0.7	-0.8
Alaska	1.0	.7	-.6	.9	.4	1.0
Arizona	-.1	-.3	([1])	-.2	.2	.5
Arkansas	([1])	.2	.2	-.2	-.4	-.6
California	-.2	-.2	([1])	.7	-.4	-1.2
Colorado	.6	.3	.8	-.3	-.5	-.6
Connecticut	.4	.1	.2	.1	-.7	-.1
Delaware	-.3	-.5	.2	-.2	-.4	-1.2
District of Columbia	-.2	.6	-.1	3.3	.3	2.1
Florida	.2	-.4	-.6	-1.1	-.6	-.3
Georgia	.5	-.1	.2	-.3	-1.6	1.0
Hawaii	.7	.1	.3	.9	-.5	.3
Idaho	.5	.2	-.9	-.8	.9	-1.2
Illinois	.2	.1	-.2	.6	-.7	-.9
Indiana	.4	.4	-.2	.7	-1.5	-.8
Iowa	-.2	-.3	-.6	-.1	-1.3	-1.2
Kansas	-.5	-.1	-1.0	-.5	-.4	-2.1
Kentucky	([1])	-.1	.2	.2	-1.3	-2.0
Louisiana	-.1	-.3	-.8	.8	-1.4	-1.9
Maine	.4	.7	.6	.7	-.6	-.8
Maryland	.5	1.4	.3	.2	-.4	.9
Massachusetts	.3	-.9	.1	.6	-.3	-1.4
Michigan	.7	-.3	-.8	1.6	-1.6	-2.0
Minnesota	-.4	.3	-.2	.6	.4	-.5
Mississippi	.1	.5	1.1	-.1	-.9	-.8
Missouri	.9	.2	.1	.2	-.4	.6
Montana	-.1	-.1	([1])	-.3	-.5	-.2
Nebraska	-.3	-1.2	.7	1.4	-.7	-.6
Nevada	-.4	-1.1	1.8	.1	-.4	-2.1
New Hampshire	-1.3	2.5	.5	.8	.6	-1.2
New Jersey	.4	-.1	([2])	1.8	([1])	-.2
New Mexico	([1])	.7	-.5	.2	.7	.1
New York	.4	.9	.8	.2	-.5	-.9
North Carolina	([1])	-.4	.4	.1	-1.3	-.9
North Dakota	-.9	.1	([1])	.7	-.1	-1.1
Ohio	.4	.2	.5	.8	-.1	-1.5
Oklahoma	-.3	1.0	-.7	-.5	.8	-1.8
Oregon	-.1	-.9	-1.3	.2	.2	-.7
Pennsylvania	-.3	.5	.7	1.2	-.4	([1])
Rhode Island	.3	-.1	-.4	1.0	-.1	-.5
South Carolina	1.1	-.2	-.1	([1])	-2.9	-1.6
South Dakota	.2	.1	.4	-.7	-.5	-1.0
Tennessee	.6	-.2	.5	.5	-.9	-2.1
Texas	1.3	.4	.1	.4	-.5	-.2
Utah	.8	-.7	([1])	.2	-.4	-.1
Vermont	-.6	1.1	-.4	.9	([1])	.6
Virginia	.5	-.8	.6	.7	-.3	-.3
Washington	.6	.3	-.1	1.1	-.8	-.2
West Virginia	-.2	-.2	-.3	.8	-.2	-.1
Wisconsin	-.4	-.2	1.0	.7	-.6	-1.4
Wyoming	.5	1.6	1.4	1.9	.5	-.5

[1] Less than 0.05 percent.
[2] Data for New Jersey were not benchmarked in 1999 due to the unavailability of universe counts for that State.

Table 3. **Benchmark revisions for total nonfarm employment in metropolitan statistical areas, March 2002**

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	More than 1 million
Number of MSAs	274	82	131	35	26
Average absolute percentage revision	1.3	1.2	1.3	1.4	1.1
Range	-4.7 : 5.0	-4.0 : 3.7	-4.2 : 5.0	-4.7: 1.8	-2.9 : 2.0
Mean	-.5	-.4	-.4	-1.1	-.8
Standard deviation	1.5	1.5	1.6	1.5	1.1