

## March 2007 Benchmarks for the Nonfarm Payroll Survey

Daniel Jackson

Economist

With the release of data for January 2008, the Bureau of Labor Statistics (BLS) introduced its annual revision of national estimates of employment, hours, and earnings from the Current Employment Statistics (CES) monthly survey of nonfarm establishments. Each year, the CES survey realigns its sample-based estimates to incorporate universe counts of employment—a process known as benchmarking. Comprehensive counts of employment, or benchmarks, are derived primarily from the unemployment insurance (UI) tax reports that nearly all employers are required to file with State Workforce Agencies.

### Summary of the benchmark revisions

The March 2007 benchmark level for total nonfarm employment is 136,533,000; this figure is 293,000 below the sample-based estimate for March 2007, an adjustment of -0.2 percent. [Table 1](#) shows the total nonfarm percentage benchmark revisions for the past ten years.

[Table 2](#) shows the nonfarm employment benchmarks for March 2007, not seasonally adjusted, by industry. As is usually the case, benchmark revisions at many industry levels were larger in percentage terms than at total nonfarm, but were offsetting. No individual supersector dominated in terms of the size of revision. Six supersectors had downward revisions. The largest downward revision occurred in manufacturing with a revision of -137,000, or -1.0 percent. The revision is concentrated in machinery, revised by

-33,900 or -2.9 percent, plastic and rubber products, revised by -33,400 or -4.4 percent, and computer and electronic products, revised by -29,000 or -2.3 percent.

Other supersectors had downward revisions of similar magnitude. Estimates in financial activities were revised -111,000, or -1.3 percent, while estimates were revised downward by 108,000, or -0.8 percent, in leisure and hospitality. Within financial activities, insurance carriers was revised -47,700, or -3.4 percent. Limited-service eating places revised in leisure and hospitality by -46,000, or -1.1 percent.

Information had a revision of -54,000, or -1.8 percent. Most of the revision in information was driven by telecommunications, which was revised down by 29,600, or -2.9 percent. Other supersectors with downward revisions were government (-52,000, or -0.2 percent) and education and health services (-39,000, or -0.2 percent).

Four supersectors had upward revisions. Trade, transportation, and utilities was revised upward by 140,000, or 0.5 percent. Within the supersector, retail trade dominated with a revision of 107,500, or 0.7 percent. Also contributing was an upward revision in wholesale trade of 21,500, or 0.4 percent, and an upward revision in transportation and warehousing of 11,500, or 0.3 percent. The other supersectors with upward revisions were professional and business services (revised up 44,000, or 0.2 percent), other services (18,000, or 0.3 percent), and construction (6,000, or 0.1 percent).

### **Revisions in the post-benchmark period**

Post-benchmark period estimates from April 2007 to October 2007 were calculated for each month based on new benchmark levels, new model-based estimates for the net of birth/death employment, and a slightly new sample composition resulting from the annual sample update (beginning with November).

[Text table A](#) shows the net birth/death model figures for the supersectors over the post-benchmark period. From April 2007 to December 2007, the cumulative net birth/death model added 883,000, compared with 1,059,000 in the previously published April to December estimates.

### **Why benchmarks differ from estimates**

A benchmark revision is the difference between the benchmark employment level for a given March and its corresponding sample-based estimate. The overall accuracy of the establishment survey is usually gauged by the size of this difference. The benchmark revision often is regarded as a proxy for total survey error, but this does not take into account error in the universe data. The employment counts obtained from quarterly unemployment insurance tax forms are administrative data that reflect employer record-keeping practices and differing State laws and procedures. The benchmark revision can be more precisely interpreted as the difference between two independently derived employment counts, each subject to its own error sources.

Like all sample surveys, the establishment survey is susceptible to two sources of error: sampling error and nonsampling error. Sampling error is present any time a sample is used to make inferences about a population. The magnitude of the sampling error, or variance, relates directly to sample size and the percentage of the universe covered by that sample. The CES monthly survey captures

slightly under one-third of the universe, exceptionally high by usual sampling standards. This coverage insures a small sampling error at the total nonfarm employment level.

Both the universe counts and the establishment survey estimates are subject to nonsampling errors common to all surveys—coverage, response, and processing errors. The error structures for both the CES monthly survey and the UI universe are complex. Still, the two programs generally produce consistent total employment figures, each validating the other. Over the last decade, annual benchmark revisions at the total nonfarm level have averaged 0.2 percent, with an absolute range from less than 0.05 percent to 0.6 percent.

### **Benchmark revisions effects for other datatypes**

The routine benchmarking process results in revisions to the series for production and nonsupervisory workers. There are no benchmark employment levels for these series; they are revised by preserving ratios of employment for the particular data type to all employees employment prior to benchmarking, and then applying these ratios to the revised all-employee figures. These figures are calculated at the basic cell level and then aggregated to produce the summary estimates.

Average weekly hours and average hourly earnings are not benchmarked; they are estimated solely from reports supplied by survey respondents at the basic estimating cell level.

The aggregate industry levels of the hours and earnings series are derived as a weighted average. The production or nonsupervisory worker employment estimates for the basic cells are used as weights for the hours and earnings estimates for broader

industry groupings. Adjustments of the all-employee estimates to new benchmarks may alter the weights, which, in turn, may change the estimates for hours and earnings of production or nonsupervisory workers at higher levels of aggregation.

Generally, new employment benchmarks have little effect on hours and earnings estimates for major groupings. To influence the hours and earnings estimates of a broader group, employment revisions have to be relatively large and must affect industries that have hours or earnings averages that are substantially different from those of other industries in their group. [Table 4](#) gives information on the levels of specific hours and earnings series resulting from the March 2007 benchmark. At the total private level, there was no change in average weekly hours from the previously published level, while average hourly earnings was decreased from its previously published level by 1 cent.

## **Methods**

*Benchmark adjustment procedure.* Establishment survey benchmarking is done on an annual basis to a population derived primarily from the administrative file of employees covered by unemployment insurance (UI). The time required to complete the revision process—from the full collection of the UI population data to publication of the revised industry estimates—is about 10 months. The benchmark adjustment procedure replaces the March sample-based employment estimates with UI-based population counts for March. The benchmark therefore determines the final employment levels, while sample movements capture month-to-month trends.

Benchmarks are established for each basic estimating cell and are aggregated to develop published levels. On a not seasonally adjusted basis, the sample-based estimates for the year preceding and the year following the benchmark also are then subject to revision. Employment estimates for the months between the most recent March benchmark and the previous year's benchmark are

adjusted using a "wedge back" procedure. In this process, the difference between the benchmark level and the previously published March estimate for each estimating cell is computed. This difference, or error, is linearly distributed across the 11 months of estimates subsequent to the previous benchmark; eleven-twelfths of the March difference is added to February estimates, ten-twelfths to January estimates, and so on, ending with the previous April estimates, which receive one-twelfth of the March difference. The wedge procedure assumes that the total estimation error accumulated at a steady rate since the last benchmark. Applying previously derived over-the-month sample changes to the revised March level yields revised estimates for the months following the March benchmark. New net birth/death model estimates also are calculated and applied during post-benchmark estimation, and new sample is introduced from the annual update.

*Benchmark source material.* The principal source of benchmark data for private industries is the Quarterly Census of Employment and Wages (QCEW). These employment data are provided to State Workforce Agencies by employers covered by State UI laws. BLS uses several other sources to establish benchmarks for the remaining industries partially covered or exempt from mandatory UI coverage, accounting for nearly 3 percent of the nonfarm employment total.

Data on employees covered under Social Security laws, published by the U.S. Census Bureau in [County Business Patterns](#), are used to augment UI data for industries not fully covered by the UI scope, such as nonoffice insurance sales workers, child daycare workers, religious organizations, and private schools and hospitals. Benchmarks for State and local government hospitals and educational institutions are based on the Annual Census of Governments conducted by the Census Bureau. Benchmark data from

these sources are available only on a lagged basis. Extrapolation to a current level is accomplished by applying the employment trends from the UI-covered part of the population in these industries to the noncovered part. Universe data for interstate railroads are obtained from the Railroad Retirement Board.

*Business birth and death estimation.* Regular updating of the CES sample frame with information from the UI universe files helps to keep the CES survey current with respect to employment from business births and business deaths. The timeliest UI universe files available, however, always will be a minimum of 9 months out of date. The CES survey thus can not rely on regular frame maintenance alone to provide estimates for business birth and death employment contributions. BLS has researched both sample-based and model-based approaches to measuring birth units that have not yet appeared on the UI universe frame. Since the research demonstrated that sampling for births was not feasible in the very short CES production timeframes, the Bureau is utilizing a model-based approach for this component.

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 is utilizing an estimation procedure with two components. The first component uses business deaths to impute employment for business births. This is incorporated into the sample-based link relative estimate procedure by simply not reflecting sample units going out of business, but imputing to them the same trend as the other firms in the sample. The second component is an ARIMA time series model designed to estimate the residual net birth/death employment not accounted for by the imputation. The historical time series used to create and test

the ARIMA model was derived from the UI universe micro level database, and reflects the actual residual net of births and deaths over the past five years. The net birth/death model component figures are unique to each month and include negative adjustments in some months. Furthermore, these figures may exhibit a seasonal pattern observed in the historical UI universe data series.

### **Availability of revised data**

[LABSTAT](#), the BLS public database on the Internet, contains all historical employment, hours, and earnings data revised as a result of this benchmark, including both unadjusted and seasonally adjusted data. The data can be accessed at <http://www.bls.gov/ces/>, the Current Employment Statistics homepage.

### **Conversion to the 2007 North American Industry Classification System**

Also with the release of the January 2008 data, the CES national nonfarm payroll series were updated to the 2007 North American Industry Classification System (NAICS) from the 2002 NAICS basis. The conversion to NAICS 2007 resulted in minor definitional changes within the manufacturing, information, financial activities, and professional and technical services sectors. The most significant revisions are in the Information sector, particularly within the Telecommunications area. None of the revisions crossed supersector boundaries.

In order to avoid time series breaks, all impacted series were reconstructed back to at least 1990. For a small number of series, the reconstruction extends back prior to 1990, to the previously existing start date of the series. The reconstruction methodology is based on the first quarter 2007 unemployment insurance (UI) microdata, which were coded on both a 2002 NAICS and a 2007 NAICS



basis. Ratios were established from this dual coded file; the ratios were used to map employment from the 2002 NAICS series to the 2007 NAICS series. For example, the March 2007 employment ratios for 2007 NAICS subsector 50-5171 (wired telecommunications carriers) indicate that 71.6 percent of the series is formed from 2002 NAICS 50-5171, 23 percent of it comes from 2002 NAICS 50-5175 (cable and other program distribution), and 5.4 percent is from 2002 NAICS 50-5181 (ISPs and web search portals). These ratios were applied to the 2002 NAICS series and the results were summed to derive the 2007 NAICS series. The 2002 NAICS to 2007 NAICS employment ratios, or distribution of employment from 2002 NAICS to 2007 NAICS, can be seen in exhibit 1. The 2007 NAICS to 2002 NAICS employment ratios, or the composition of the 2007 NAICS series from 2002 NAICS, can be seen in exhibit 2.

**Exhibit 1. 2002 NAICS to 2007 NAICS employment ratios**

<b>CES NAICS 2002 Tabcode</b>	<b>2002 Industry</b>	<b>CES NAICS 2007 Tabcode</b>	<b>2007 Industry</b>	<b>Ratio</b>
31-334200	Communications equipment	31-334200	Communications equipment	96.3
31-334200	Communications equipment	31-334515	Electricity and signal testing instruments	3.7
31-339100	Medical equipment and supplies	31-333200	Industrial machinery	0.3
31-339100	Medical equipment and supplies	31-333400	HVAC and commercial refrigeration equipment	0.1
31-339100	Medical equipment and supplies	31-333990	All other general purpose machinery	0.4
31-339100	Medical equipment and supplies	31-337129	Miscellaneous household and institutional furniture	0.9
31-339100	Medical equipment and supplies	31-339100	Medical equipment and supplies	98.4
32-315211	Men's cut and sew	32-314990	All other textile product	21

	apparel contractors		mills	
32-315211	Men's cut and sew apparel contractors	32-315211	Men's cut and sew apparel contractors	79
32-315212	Women's cut and sew apparel contractors	32-314990	All other textile product mills	3.9
32-315212	Women's cut and sew apparel contractors	32-315212	Women's cut and sew apparel contractors	96.1
32-326190	Other plastics products	31-336612	Boat Building	0.2
32-326190	Other plastics products	32-326190	Other plastics products	99.8
32-326291	Rubber products for mechanical use	32-326291	Rubber products for mechanical use	91.7
32-326291	Rubber products for mechanical use	32-326299	All other rubber products	8.3
32-326299	All other rubber products	31-336612	Boat Building	0.7
32-326299	All other rubber products	32-326299	All other rubber products	99.3
50-516000	Internet publishing and broadcasting	50-519100	All other information services	100
50-517212	Cellular and other wireless carriers	50-517200	Wireless telecommunications carriers (except satellite)	100
50-517300	Telecommunications resellers	50-517911	Telecommunications resellers	100
50-517500	Cable and other program distribution	50-517100	Wired telecommunications carriers	100
50-518100	ISPs and web search portals	50-517100	Wired telecommunications carriers	41
50-518100	ISPs and web search portals	50-517919	All other telecommunications	28
50-518100	ISPs and web search portals	50-519100	All other information services	31.1
55-525900	Other investment pools and funds	55-525900	Other investment pools and funds	90.4
55-525900	Other investment pools and funds	55-531110	Lessors of residential buildings	4.1
55-525900	Other investment pools and funds	55-531120	Lessors of nonresidential buildings	3.7
55-525900	Other investment pools	55-531130	Miniwarehouse and self-	0.4

	and funds		storage unit operators	
55-525900	Other investment pools and funds	55-531190	Lessors of other real estate property	1.4
60-541612	Human resource consulting services	60-541612	Human resource consulting services	72.9
60-541612	Human resource consulting services	60-561312	Executive search services	27.1
60-561310	Employment placement agencies	60-561311	Employment placement agencies	100

**Exhibit 2. 2007 NAICS to 2002 NAICS employment ratios**

<b>CES NAICS 2007 Tabcode</b>	<b>2007 Industry</b>	<b>CES NAICS 2002 Tabcode</b>	<b>2002 Industry</b>	<b>Ratio</b>
<b>31-333200</b>	Industrial machinery	31-333200	Industrial machinery	99.4
<b>31-333200</b>	Industrial machinery	31-339100	Medical equipment and supplies	0.6
<b>31-333400</b>	HVAC and commercial refrigeration equipment	31-333400	HVAC and commercial refrigeration equipment	99.9
<b>31-333400</b>	HVAC and commercial refrigeration equipment	31-339100	Medical equipment and supplies	0.1
<b>31-333990</b>	All other general purpose machinery	31-333990	All other general purpose machinery	99.1
<b>31-333990</b>	All other general purpose machinery	31-339100	Medical equipment and supplies	0.9
<b>31-334515</b>	Electricity and signal testing instruments	31-334515	Electricity and signal testing instruments	89.3
<b>31-334515</b>	Electricity and signal testing instruments	31-334200	Communications equipment	10.7
<b>31-334515</b>	Electricity and signal testing instruments	31-334515	Electricity and signal testing instruments	89.3
<b>31-334515</b>	Electricity and signal testing instruments	31-334220	Broadcast and wireless communications equipment	10.7
<b>31-336612</b>	Boat building	31-336612	Boat building	98.4
<b>31-336612</b>	Boat building	32-326190	Other plastics products	1.3

<b>31-336612</b>	Boat building	32-326299	All other rubber products	0.3
<b>31-337129</b>	Miscellaneous household and institutional furniture	31-337129	Miscellaneous household and institutional furniture	93.8
<b>31-337129</b>	Miscellaneous household and institutional furniture	31-339100	Medical equipment and supplies	6.2
<b>32-314990</b>	All other textile product mills	32-314990	All other textile product mills	88.3
<b>32-314990</b>	All other textile product mills	32-315211	Men's cut and sew apparel contractors	6.7
<b>32-314990</b>	All other textile product mills	32-315212	Women's cut and sew apparel contractors	5
<b>32-315210</b>	Cut and sew apparel contractors	32-315212	Women's cut and sew apparel contractors	83.3
<b>32-315210</b>	Cut and sew apparel contractors	32-315211	Men's cut and sew apparel contractors	16.7
<b>32-326299</b>	All other rubber products	32-326299	All other rubber products	88.9
<b>32-326299</b>	All other rubber products	32-326291	Rubber products for mechanical use	11.1
<b>50-517100</b>	Wired telecommunications carriers	50-517100	Wired telecommunications carriers	71.6
<b>50-517100</b>	Wired telecommunications carriers	50-517500	Cable and other program distribution	23
<b>50-517100</b>	Wired telecommunications carriers	50-518100	ISPs and web search portals	5.4
<b>50-517200</b>	Wireless telecommunications carriers (except satellite)	50-517212	Cellular and other wireless carriers	92
<b>50-517200</b>	Wireless telecommunications carriers (except satellite)	50-517200	Wireless telecommunications carriers (except satellite)	8
<b>50-517900</b>	Other telecommunications	50-517300	Telecommunications resellers	72.6
<b>50-517900</b>	Other telecommunications	50-518100	ISPs and web search portals	14.6
<b>50-517900</b>	Other telecommunications	50-517900	Satellite and other telecommunications	12.7
<b>50-517911</b>	Telecommunications	50-517300	Telecommunications	100

	resellers		resellers	
<b>50-519130</b>	Internet publishing and broadcasting and web search portals	50-516000	Internet publishing and broadcasting	60.8
<b>50-519130</b>	Internet publishing and broadcasting and web search portals	50-518100	ISPs and web search portals	39.2
<b>55-531110</b>	Lessors of residential buildings	55-531110	Lessors of residential buildings	99.5
<b>55-531110</b>	Lessors of residential buildings	55-525900	Other investment pools and funds	0.5
<b>55-531120</b>	Lessors of nonresidential buildings	55-531120	Lessors of nonresidential buildings	98.9
<b>55-531120</b>	Lessors of nonresidential buildings	55-525900	Other investment pools and funds	1.1
<b>55-531130</b>	Miniwarehouse and self-storage unit operators	55-531130	Miniwarehouse and self-storage unit operators	99.5
<b>55-531130</b>	Miniwarehouse and self-storage unit operators	55-525900	Other investment pools and funds	0.5
<b>55-531190</b>	Lessors of other real estate property	55-531190	Lessors of other real estate property	98.5
<b>55-531190</b>	Lessors of other real estate property	55-525900	Other investment pools and funds	1.5
<b>60-561311</b>	Employment placement agencies	60-561310	Employment placement agencies	100
<b>60-561312</b>	Executive search services	60-541612	Human resource consulting services	100

None of the revisions due to the 2007 NACIS conversion crossed supersector boundaries. However, in some instances, employment levels for impacted supersectors and higher level aggregates may differ from the previously published levels. Any differences are minimal and are due to rounding of the lower level reconstructed series which are aggregated to form the higher level series.

A comparable procedure is used for hours and earnings series. Reconstructed hours and earnings for the impacted series are produced from a weighted average of the 2002 NAICS component series, the weights being the 2002 NAICS to 2007 NAICS ratios (described above). An example of the hours and earnings reconstruction is illustrated in exhibit 3.

**Exhibit 3. Hours and earnings reconstruction example using 2007 NAICS code 50-517100 - Wireless telecommunications carriers <sup>1</sup>**

2002 NAICS Structure					2007 NAICS Structure				
2002 NAICS code	Ratio <sup>2</sup>	Production workers	Aggregate hours	Aggregate payrolls	Production workers	Aggregate hours	Aggregate payrolls	Average weekly hours <sup>4</sup>	Average hourly earnings <sup>5</sup>
50-5171	1.00	402,300	16,655,000	407,553,000	402,300	16,655,000	407,553,000		
50-5175	1.00	114,500	4,557,000	78,792,000	114,500	4,557,000	78,792,000		
50-5181	0.43	90,400	3,318,000	81,383,000	39,100	1,433,400	35,158,000		
				<b>Sum <sup>3</sup></b>	555,900	22,645,400	521,503,000	40.7	23.03

1 Data are derived from March 2006 unemployment insurance data

2 The ratio represents the percent of employment in the 2002 NAICS industry that went into a specific 2007 NAICS industry

3 2007 NAICS data where sum represents new level of production workers, aggregate hours, and aggregate payrolls

4 Average weekly hours = aggregate hours/production workers

5 Average hourly earnings = aggregate payrolls/aggregate hours

As mentioned earlier, these ratios were used to reconstruct impacted series back to at least 1990. For April 2007 forward, the data for all 2007 NAICS series were produced in accordance with standard sample-based estimation techniques. The employment, hours, and earnings for impacted series were re-estimated using existing sample reports.

### Changes to the CES published series

The conversion to 2007 NAICS caused several changes to the CES published series. Exhibit 4 shows discontinued NAICS 2002 series that have been reclassified into 2007 NAICS. Exhibit 5 shows new series as a result of 2007 NAICS. Exhibit 6 shows changes in scope to published series due to the 2007 NAICS reclassification.

#### Exhibit 4. Discontinued 2002 NAICS series and reclassification into 2007 NAICS

NAICS 2002	CES NAICS 2002 Tabcode	Title	Reclassification
516	50-516000	Internet publishing and broadcasting	Moved into new NAICS 2007 industry Internet publishing and broadcasting and web search portals (50-519130)
517212	50-517212	Cellular and other wireless carriers	Combined with paging (50-517211) as Wireless telecommunications carriers (50-517200)
5173	50-517300	Telecommunications resellers	Moved to Other telecommunications (50-519100) as Telecommunications resellers (50-517919)
5175	50-517500	Cable and other program distribution	Moved into Wired telecommunications carriers (50-517100)
5181	50-5181	ISPs and web search portals	Moved the Web search portals portion to Internet publishing and broadcasting and web search portals (50-519130); Moved ISPs providing services via client-supplied telecommunications connection portion to Other telecommunications (50-517900); Moved the Broadband internet service providers (e.g., cable, DSL) portion to Wired telecommunications carriers (50-517100)

#### Exhibit 5. New series as a result of 2007 NAICS

NAICS	CES	Title	Composed of NAICS 2002 industries
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<b>2007</b>	<b>NAICS 2007 Tabcode</b>		
5179	50-517900	Other telecommunications	Other telecommunications (50-517900) and Telecommunications resellers (50-517300)
517911	50-517911	Telecommunications resellers	Telecommunications resellers (50-517300)
51911,2,9	50-519190	All other information services	Other information services (50-519100)
51913	50-519130	Internet publishing and broadcasting and web search portals	Internet publishing and broadcasting (50-516000) and the web search portals portion of (50-518000)
561311	60-561311	Employment placement agencies	Employment placement agencies (60-561310)
561312	60-561312	Executive search services	A portion of Human resource consulting services (60-541612)

**Exhibit 6. Change in scope due to 2007 NAICS**

<b>NAICS 2007</b>	<b>CES NAICS 2007 Tabcode</b>	<b>Title</b>	<b>Composed of NAICS 2002 industries</b>
33422	31-334220	Broadcasting and wireless communications equipment	A portion of Broadcasting and wireless communications equipment (31-334220) devoted to communications signal testing and evaluation equipment was moved to Electricity and signal testing instruments (31-334515)
334515	31-334515	Electricity and signal testing instruments	A portion of Broadcasting and wireless communications equipment (31-334220) devoted to communications signal testing and evaluation equipment was added to Electricity and signal testing instruments (31-334515)
33911	31-339100	Medical equipment and supplies	Laboratory apparatus and furniture manufacturing was removed from (31-339100) and reclassified into



			Industrial machinery (31-333200), AC, refrigeration, and forced air heating (31-333415), All other general purpose machinery (31-333900), Surgical appliances and supplies (31-339113), and Miscellaneous household and institutional furniture (31-337129)
3332	31-333200	Industrial machinery	Laboratory distilling equipment was removed from Medical equipment and supplies (31-339100) and added into Industrial machinery (31-333200)
333415	31-333415	AC, refrigeration, and forced air heating	Laboratory freezers was removed from Medical equipment supplies (31-339100) and added into AC, refrigeration, and forced air heating (31-334150)
339	31-339000	All other general purpose machinery	Laboratory furnaces and ovens, Laboratory scales and balances, and Laboratory centrifuges was removed from Medical equipment and supplies (31-339100) and added into All other general purpose machinery (31-339000)
339113	31-339113	Surgical appliances and supplies	All other laboratory apparatus and furniture except laboratory distilling equipment, freezers, furnaces, ovens, scales, balances, centrifuges, and furniture was removed from Medical equipment and supplies (31-339100) and added to Surgical appliances and supplies (31-339113)
337129	31-337129	Miscellaneous household and institutional furniture	Laboratory furniture (e.g., stools, tables, benches) was removed from Medical equipment and supplies (31-339100) and added to Miscellaneous household and institutional furniture (31-337129)
31521	32-315210	Cut and sew apparel contractors	Embroidery contractors removed from Cut and sew apparel contractors (32-315210) and added to All other textile product mills (32-314990)
31499	32-314990	All other textile product mills	Embroidery contractors from Cut and sew apparel contractors (32-315210) were added to All other textile product mills (32-314990)
32619	32-326190	Other plastics products	Inflatable plastics boats was removed from Other plastic

			products (32-326190) and moved to Boat building (31-336612)
336612	31-336612	Boat building	Inflatable plastics boats from Other plastic products (32-326190) and Inflatable rubber boats from All other rubber products (32-326299) was added to Boat building (31-336612)
326291	32-326291	Rubber product manufacturing for mechanical use	Rubber tubing for mechanical use was removed from Rubber product manufacturing for mechanical use (32-326291) and added to All other rubber products (32-326299)
326299	32-326299	All other rubber products	Rubber tubing for mechanical use was added to All other rubber products (32-326299), while inflatable rubber boats was moved to Boat building (31-336612)
5171	50-517100	Wired telecommunications carriers	The broadband internet service providers (e.g., cable, DSL) portion of (50-518000) and moved to Wired telecommunications carriers (50-517110) along with Cable and other program distribution (50-517500)
5172	50-517200	Wireless telecommunications carriers (except satellite)	Paging (50-517211) and Cellular and other wireless carries (50-517212) were discontinued and moved into Wireless telecommunications carriers (except satellite) (50-517200)
517911	50-517911	Telecommunications resellers	Telecommunications resellers (50-517310) was moved to Other telecommunications into Telecommunications resellers (50-517911)
5191	50-519100	Other information services	All of Internet publishing and broadcasting (50-516000) and the Web search portals portion of (50-518100) was added into Other information services (50-519100), specifically into Internet publishing and broadcasting and web search portals (50-519130)
51913	50-519130	Internet publishing and broadcasting and	All of Internet publishing and broadcasting (50-516000) and the Web search portals portion of (50-518100) into

		web search portals	Internet publishing and broadcasting and web search portals (50-519130)
518	50-518000	Data processing, hosting and related services	Moved the Web search portals portion of (50-518000) to Internet publishing and broadcasting and web search portals (50-519130) and moved the Internet service providers providing services via client-supplied telecommunications connection portion of (50-518000) to Other telecommunications (50-517900). Also moved the Broadband Internet service providers (e.g., cable, DSL) portion of (50-518000) to Wired telecommunications carriers (50-517100)
5174,9	50-517900	Other telecommunications	Telecommunications resellers (50-517310) was added to Other telecommunications into Telecommunications resellers (50-517911)
5259	55-525900	Other investment pools and funds	Portions of Other investment pools and funds (55-525900) were moved to Lessors of Residential Buildings (55-531110), Lessors of Nonresidential Buildings (55-531120), Miniwarehouse and self-storage operators (55-531130), and Lessors of other real estate property (55-531190)
53111	55-531110	Lessors of residential buildings	A portion of Other investment pools and funds (55-525900) dealing with hybrid or equity REITs primarily leasing residential buildings and dwellings were added to Lessors of residential buildings (55-531110)
53112	55-531120	Lessors of nonresidential buildings	A portion of Other investment pools and funds (55-525900) dealing with hybrid or equity REITs primarily leasing nonresidential buildings were added to Lessors of nonresidential buildings (55-531120)
53113	55-531130	Miniwarehouse and self-storage operators	A portion of Other investment pools and funds (55-525900) dealing with hybrid or equity REITs primarily leasing miniwarehouses or self-storage units were added to Miniwarehouses and self-storage operators (55-

			531130)
53119	55-531190	Lessors of other real estate property	A portion of Other investment pools and funds (55-525900) dealing with hybrid or equity REITS primarily leasing other real estate property were added to Lessors of other real estate property (55-531190)
541612	60-541612	Human resource consulting services	Executive search consulting services was moved out of Human resource consulting services (60-541612) and added into Employment placement agencies (60-561310) creating Executive search services (60-561312)
56131	60-561310	Employment placement agencies and executive search agencies	Executive search consulting services was moved out of Human resources consulting services (60-541612) and added into Employment placement agencies (60-561310)

Additionally, the CES program conducts an annual review of sample adequacy for its estimation and publication cells and makes adjustments to the published series as warranted. This year several all employee series will be discontinued as a result of the annual review of sample employment and universe coverage. Exhibit 7 shows the discontinued all employee series due to the annual sample adequacy review.

**Exhibit 7. Discontinued all employee series**

Industry title	NAICS code	CES industry tabcode	Next highest published level
Office machinery	333313	31-333313	Commercial and service industry machinery (31-333300)
Photographic and photocopying	333315	31-333315	Commercial and service industry machinery (31-

equipment			333300)
Miscellaneous commercial and service industry machinery	333319	31-333319	Commercial and service industry machinery (31-333300)
Electric lamp bulbs and parts	33511	31-335110	Electric lighting equipment (31-335100 )
Lighting fixtures	33512	31-335120	Electric lighting equipment (31-335100 )
Electric housewares and household fans	335211	31-335211	Small electrical appliances (31-335210)
Household refrigerators and home freezers	335222	31-335222	Major appliances (31-335220)
Current carrying devices	335931	31-335931	Wiring devices (31-335930)
Carburetors, pistons, rings, and valves	336311	31-336311	Motor vehicle gasoline engine parts (31-336310)
Gasoline engine and engine parts	336312	31-336312	Motor vehicle gasoline engine parts (31-336310)
Hosiery and sock mills	31511	32-315110	Apparel knitting mills (32-315100)
Men's cut and sew apparel contractors	315211	32-315211	Cut and sew apparel contractors(32-315210)
Women's cut and sew apparel contractors	315212	32-315212	Cut and sew apparel contractors(32-315210)

Review of the sample receipts has also led to the discontinuation of production worker, hours, and earnings estimates for some small industries that no longer have sufficient sample. Exhibits 8 and 9 show the series that will be discontinued.

**Exhibit 8. Discontinued production worker, hours, and earnings series**

<b>Industry title</b>	<b>NAICS code</b>	<b>CES industry tabcode</b>
Pottery, ceramics, and plumbing fixtures	32711	31-327110
Nonferrous metal, except CU and AL, shaping	33149	31-331490
Iron and steel forging	332111	31-332111
Ball and roller bearings	332991	31-332991
Search, detection, and navigation instruments	334511	31-334511
Motors and generators	335312	31-335312
Switchgear and switchboard apparatus	335313	31-335313
Aircraft engines and engine parts	336412	31-336412
Guided missiles, space vehicles, and parts	336419	31-336419
Sugar	31131	32-311310
Prerecorded tape, CD, and record stores	45122	42-451220

**Exhibit 9. Discontinued average overtime series**

<b>Industry title</b>	<b>NAICS code</b>	<b>CES industry tabcode</b>
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Pottery, ceramics, and plumbing fixtures	32711	31-327110
Nonferrous metal, except CU and AL, shaping	33149	31-331490
Iron and steel forging	332111	31-332111
Ball and roller bearings	332991	31-332991
Search, detection, and navigation instruments	334511	31-334511
Motors and generators	335312	31-335312
Aircraft engines and engine parts	336412	31-336412
Guided missiles, space vehicles, and parts	336419	31-336419
Sugar	31131	32-311310
Leather and hide tanning and finishing and other leather products	3169	32-316900

Finally, the CES program also updated industry titles for a handful of industries. Exhibit 10 shows series whose titles will be changed.

**Exhibit 10. Change in title**

<b>NAICS 2007</b>	<b>CES NAICS 2007 Tabcode</b>	<b>Original Title</b>	<b>New Title</b>
4921	43-492100	Couriers	Couriers and express delivery services
49211	43-492110	Couriers	Couriers and express delivery services
5172	50-517200	Wireless telecommunications carriers	Wireless telecommunications carriers (except satellite)
5174,9	50-517900	Satellite and other telecommunications	Other telecommunications

518	50-518000	Internet service providers, web search portals, and data processing services	Data processing, hosting and related services
5182	50-518200	Data processing and related services	Data processing, hosting and related services
51821	50-518210	Data processing and related services	Data processing, hosting and related services
54171	60-541710	Physical, engineering, and biological research	Research and development in the physical, engineering, and life sciences
56131	60-561310	Employment placement agencies	Employment placement agencies and executive search agencies
561422	60-561422	Telemarketing bureaus	Telemarketing bureaus and other contact centers
72	70-720000	Accommodations and food services	Accommodation and food services
721	70-721000	Accommodations	Accommodation
7211	70-721100	Traveler accommodations and other longer-term accommodations	Traveler accommodation and other longer-term accommodation
72119	70-721190	Miscellaneous traveler accommodations	Miscellaneous traveler accommodation
721199	70-721199	All other traveler accommodations and rooming and boarding houses	All other traveler accommodation and rooming and boarding houses
722212	70-722212	Cafeterias	Cafeterias, grill buffets, and buffets



## **Seasonal adjustment procedure**

BLS uses X-12 ARIMA software developed by the U.S. Census Bureau to seasonally adjust national employment, hours, and earnings series derived from the CES program. Individual series are seasonally adjusted using either a multiplicative or an additive model (Exhibit 11), and seasonal adjustment factors are directly applied to the component levels. For employment, individual 3-digit NAICS levels are seasonally adjusted, and higher level aggregates are formed by summing these components. Seasonally adjusted totals for hours and earnings are obtained by taking weighted averages of the seasonally adjusted data for the component series.

## **Special model adjustments**

*Variable survey intervals.* Beginning with the release of the 1995 benchmark, BLS refined the seasonal adjustment procedures to control for survey interval variations, sometimes referred to as the 4- versus 5- week effect. Although the CES survey is referenced to a consistent concept – the pay period including the 12<sup>th</sup> of each month – inconsistencies arise because there are sometimes 4 and sometimes 5 weeks between the week including the 12<sup>th</sup> 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, thereby complicating seasonal adjustment.

Standard seasonal adjustment methodology relies heavily on the experience of the most recent 3 years to determine the expected seasonal change in employment for each month of the current year. Prior to the implementation of the adjustment, the procedure did not distinguish between 4- and 5-week survey intervals, and the accuracy of the seasonal expectation depended in large measure on how well the current year's survey interval corresponded with those of the previous 3 years. All else the same, the

greatest potential for distortion occurred when the current month being estimated had a 5-week interval but the 3 years preceding it were all 4-week intervals, or conversely when the current month had a 4-week interval but the 3 years preceding it were all 5-week intervals.

BLS adopted REGARIMA (regression with auto-correlated errors) modeling to identify the estimated size and significance of the calendar effect for each published series. REGARIMA combines standard regression analysis, which measures correlation among two or more variables, with ARIMA modeling, which describes and predicts the behavior of data series based on its own past history. For many economic time series, including nonfarm payroll employment, observations are auto-correlated over time; that is, each month's value is significantly dependent on the observations that precede it. These series, therefore, usually can be successfully fit using ARIMA models. If auto-correlated time series are modeled through regression analysis alone, the measured relationships among other variables of interest may be distorted due to the influence of the auto-correlation. Thus, the REGARIMA technique is appropriate for measuring relationships among variables of interest in series that exhibit autocorrelation, such as nonfarm payroll employment.

In this application, the correlations of interest are those between employment levels in individual calendar months and the lengths of the survey intervals for those months. The REGARIMA models evaluate the variation in employment levels attributable to 11 separate survey interval variables, one specified for each month, except March. March is excluded because there are almost always 4 weeks between the February and March surveys. Models for individual basic series are fit with the most recent 10 years of data available, the standard time span used for CES seasonal adjustment.

The REGARIMA procedure yields regression coefficients for each of the 11 months specified in the model. These coefficients provide estimates of the strength of the relationship between employment levels and the number of weeks between surveys for the 11 modeled months. The X-12 ARIMA software also produces diagnostic statistics that permit the assessment of the statistical significance of the regression coefficients, and all series are reviewed for model adequacy.

Because the 11 coefficients derived from the REGARIMA models provide an estimate of the magnitude of variation in employment levels associated with the length of the survey interval, these coefficients are used to adjust the CES data to remove the calendar effect. These “filtered” series then are seasonally adjusted using the standard X-12 ARIMA software.

For a few series, REGARIMA models do not fit well; these series are seasonally adjusted with X-12 software but without the interval effect adjustment. There are several additional special effects modeled through the REGARIMA process; they are described below.

*Construction series.* Beginning with the 1996 benchmark revision, BLS utilized special treatment to adjust construction industry series. In the application of the interval effect modeling process to the construction series, there initially was difficulty in accurately identifying and measuring the effect because of the strong influence of variable weather patterns on employment movements in the industry. Further research allowed BLS to incorporate interval effect modeling for the construction industry by disaggregating the construction series into its finer industry and geographic estimating cells and tightening outlier designation parameters. This allowed a more precise identification of weather-related outliers that had masked the interval effect and clouded the seasonal adjustment

patterns in general. With these outliers removed, interval effect modeling became feasible. The result is a seasonally adjusted series for construction that is improved because it is controlled for two potential distortions: unusual weather events and the 4- versus 5-week effect.

*Floating holidays.* BLS is continuing the practice of making special adjustments for average weekly hours and average weekly overtime series to account for the presence or absence of religious holidays in the April survey reference period and the occurrence of Labor Day in the September reference period, back to the start date of each series.

*Local government series.* A special adjustment also is made in November each year to account for variations in employment due to the presence or absence of poll workers in the local government, excluding educational services series.

*Refinements in hours and earnings seasonal adjustment.* With the release of the 1997 benchmark, BLS implemented refinements to the seasonal adjustment process for the hours and earnings series to correct for distortions related to the method of accounting for the varying length of payroll periods across months. There is a significant correlation between over-the-month changes in both the average weekly hour (AWH) and the average hourly earnings (AHE) series and the number of weekdays in a month, resulting in noneconomic fluctuations in these two series. Both AWH and AHE show more growth in "short" months (20 or 21 weekdays) than in "long" months (22 or 23 weekdays). The effect is stronger for the AWH than for the AHE series.

The calendar effect is traceable to response and processing errors associated with converting payroll and hours information from sample respondents with semi-monthly or monthly pay periods to a weekly equivalent. The response error comes from sample respondents reporting a fixed number of total hours for workers regardless of the length of the reference month, while the CES

conversion process assumes that the hours reporting will be variable. A constant level of hours reporting most likely occurs when employees are salaried rather than paid by the hour, as employers are less likely to keep actual detailed hours records for such employees. This causes artificial peaks in the AWH series in shorter months that are reversed in longer months.

The processing error occurs when respondents with salaried workers report hours correctly (vary them according to the length of the month), which dictates that different conversion factors be applied to payroll and hours. The CES processing system uses the hours conversion factor for both fields, resulting in peaks in the AHE series in short months and reversals in long months.

REGARIMA modeling is used to identify, measure, and remove the length-of-pay-period effect for seasonally adjusted average weekly hours and average hourly earnings series. The length-of-pay-period variable proves significant for explaining AWH movements in all the service-providing industries except retail trade. For AHE, the length-of-pay-period variable is significant for wholesale trade, financial activities, professional and business services, and other services. All AWH series in the service-providing industries except retail trade have been adjusted from January 1990 forward. The AHE series for wholesale trade, financial activities, professional and business services, and other services have been adjusted from January 1990 forward as well. For this reason, calculations of over-the-year change in the establishment hours and earnings series should use seasonally adjusted data.

The series to which the length-of-pay-period adjustment is applied are not subject to the 4- versus 5-week adjustment, as the modeling cannot support the number of variables that would be required in the regression equation to make both adjustments. See Exhibit 11 for series that have the calendar effects modeling described above.

**Exhibit 11. Model specifications**

<b>Seasonal Adjustment - AE</b>				
<b>NAICS Tabcode</b>	<b>Tabcode title</b>	<b>Mode</b>	<b>4/5 week adj</b>	<b>Other adj</b>
1011331000	Logging	MULT	X	
1021100000	Oil and gas extraction	MULT	X	
1021200000	Mining, except oil and gas	-	X	Indirect <sup>1</sup>
1021210000	Coal mining	MULT	X	
1021300000	Support activities for mining	ADD	X	
2023610000	Residential building	-	X	Indirect
2023620000	Nonresidential building	-	X	Indirect
2023700000	Heavy and civil engineering construction	ADD	X	
2023800000	Specialty trade contractors	-	X	Indirect
2023800100	Residential specialty trade contractors	MULT	X	Raked <sup>2</sup>
2023800200	Nonresidential specialty trade contractors	ADD	X	Raked
3132100000	Wood products	ADD	X	
3132700000	Nonmetallic mineral products	ADD	X	
3133100000	Primary metals	MULT	X	
3133200000	Fabricated metal products	MULT	X	
3133300000	Machinery	MULT	X	
3133400000	Computer and electronic products	-	X	Indirect
3133410000	Computer and	MULT	X	

	peripheral equipment		
3133420000	Communications equipment	MULT	X
3133440000	Semiconductors and electronic components	MULT	X
3133450000	Electronic instruments	MULT	X
3133500000	Electrical equipment and appliances	MULT	X
3133600000	Transportation equipment	ADD	
3133600100	Motor vehicles and parts	ADD	
3133700000	Furniture and related products	MULT	X
3133900000	Miscellaneous manufacturing	MULT	X
3231100000	Food manufacturing	MULT	X
3231200000	Beverages and tobacco products	MULT	X
3231300000	Textile mills	MULT	X
3231400000	Textile product mills	MULT	X
3231500000	Apparel	MULT	X
3231600000	Leather and allied products	MULT	X
3232200000	Paper and paper products	MULT	X
3232300000	Printing and related support activities	MULT	X
3232400000	Petroleum and coal products	MULT	X
3232500000	Chemicals	MULT	X
3232600000	Plastics and rubber products	MULT	X

4142300000	Durable goods	MULT	X	
4142400000	Nondurable goods	MULT	X	
4142500000	Electronic markets and agents and brokers	MULT	X	
4244100000	Motor vehicle and parts dealers	-	X	Indirect
4244110000	Automobile dealers	MULT	X	
4244200000	Furniture and home furnishings stores	MULT	X	
4244300000	Electronics and appliance stores	MULT	X	
4244400000	Building material and garden supply stores	MULT	X	
4244500000	Food and beverage stores	MULT	X	
4244600000	Health and personal care stores	MULT	X	
4244700000	Gasoline stations	MULT	X	
4244800000	Clothing and clothing accessories stores	MULT	X	
4245100000	Sporting goods, hobby, book, and music stores	MULT	X	
4245200000	General merchandise stores	-	X	Indirect
4245210000	Department stores	MULT	X	
4245300000	Miscellaneous store retailers	MULT	X	
4245400000	Nonstore retailers	MULT	X	
4348100000	Air transportation	MULT	X	
4348200000	Rail transportation	ADD	X	
4348300000	Water transportation	MULT	X	



4348400000	Truck transportation	ADD	X	
4348500000	Transit and ground passenger transportation	ADD		
4348600000	Pipeline transportation	MULT	X	
4348700000	Scenic and sightseeing transportation	MULT	X	
4348800000	Support activities for transportation	ADD	X	
4349200000	Couriers and messengers	MULT	X	
4349300000	Warehousing and storage	ADD	X	
4422100000	Utilities	MULT	X	
5051100000	Publishing industries, except Internet	MULT	X	
5051200000	Motion picture and sound recording industries	MULT	X	
5051500000	Broadcasting, except Internet	MULT	X	
5051700000	Telecommunications	MULT	X	
5051800000	Data processing, hosting and related services	MULT	X	
5051900000	Other information services	MULT	X	
5552100000	Monetary authorities - central bank	ADD	X	
5552200000	Credit intermediation and related activities	-	X	Indirect
5552210000	Depository credit	MULT	X	

intermediation					
5552211000	Commercial banking	MULT		X	
5552300000	Securities, commodity contracts, investments	MULT		X	
5552400000	Insurance carriers and related activities	MULT		X	
5552500000	Funds, trusts, and other financial vehicles	MULT		X	
5553100000	Real estate	ADD		X	
5553200000	Rental and leasing services	MULT		X	
5553300000	Lessors of nonfinancial intangible assets	MULT		X	
6054100000	Professional and technical services	-		X	Indirect
6054110000	Legal services	MULT		X	
6054120000	Accounting and bookkeeping services	ADD		X	
6054130000	Architectural and engineering services	ADD		X	
6054150000	Computer systems design and related services	ADD		X	
6054160000	Management and technical consulting services	MULT		X	
6055100000	Management of companies and enterprises	MULT		X	
6056100000	Administrative and support services	-		X	Indirect

6056130000	Employment services	MULT	X	
6056132000	Temporary help services	MULT	X	
6056140000	Business support services	ADD	X	
6056170000	Services to buildings and dwellings	MULT	X	
6056200000	Waste management and remediation services	MULT	X	
6561100000	Educational services	MULT	X	
6562100000	Ambulatory health care services	-	X	Indirect
6562110000	Offices of physicians	MULT	X	
6562140000	Outpatient care centers	MULT	X	
6562160000	Home health care services	ADD	X	
6562200000	Hospitals	MULT	X	
6562300000	Nursing and residential care facilities	-	X	Indirect
6562310000	Nursing care facilities	MULT	X	
6562400000	Social assistance	-	X	Indirect
6562440000	Child day care services	ADD	X	
7071100000	Performing arts and spectator sports	MULT	X	
7071200000	Museums, historical sites, zoos, and parks	MULT	X	
7071300000	Amusements, gambling, and recreation	MULT	X	

7072100000	Accommodation	MULT	X	
7072200000	Food services and drinking places	ADD	X	
8081100000	Repair and maintenance	MULT	X	
8081200000	Personal and laundry services	MULT	X	
8081300000	Membership associations and organizations	ADD		
9091100000	Federal, except U.S. Postal Service	ADD	X	
9091912000	U.S. Postal Service	MULT	X	
9092161100	State government education	ADD	X	
9092200000	State government, excluding education	MULT	X	
9093161100	Local government education	ADD	X	
9093200000	Local government, excluding education	ADD	X	Election adjustment <sup>3</sup>

**Seasonal Adjustment - WW**

<b>NAICS Tabcode</b>	<b>Tabcode title</b>	<b>Mode</b>	<b>4/5 week adj</b>	<b>Other adj</b>
1000000000	Natural resources and mining	MULT	X	
1021000000	Mining	MULT	X	
2000000000	Construction	MULT	X	
3100000000	Durable goods	MULT	X	
3200000000	Nondurable goods	MULT	X	
4142000000	Wholesale trade	MULT	X	
4200000000	Retail trade	MULT	X	
4300000000	Transportation and warehousing	MULT	X	
4422000000	Utilities	MULT	X	
5000000000	Information	MULT	X	
5552000000	Finance and insurance	MULT	X	
5553000000	Real estate and rental and leasing	MULT	X	
6054000000	Professional and technical services	MULT	X	
6055000000	Management of companies and enterprises	ADD	X	
6056000000	Administrative and waste services	MULT	X	
6561000000	Educational services	MULT	X	
6562000000	Health care and social assistance	MULT	X	
7071000000	Arts, entertainment, and recreation	MULT	X	
7072000000	Accommodation and food services	ADD	X	
8000000000	Other services	ADD	X	
9091000000	Federal	MULT	X	
9092000000	State government	MULT	X	
9093000000	Local government	MULT	X	Election adjustment

**Seasonal Adjustment - PW**

<b>NAICS Tabcode</b>	<b>Tabcode title</b>	<b>Mode</b>	<b>4/5 week adj</b>	<b>Other adj</b>
1000000000	Natural resources and mining	ADD	X	
2000000000	Construction	ADD	X	
3132100000	Wood products	ADD	X	
3132700000	Nonmetallic mineral products	ADD	X	
3133100000	Primary metals	MULT	X	
3133200000	Fabricated metal products	MULT	X	
3133300000	Machinery	MULT	X	
3133400000	Computer and electronic products	MULT	X	
3133500000	Electrical equipment and appliances	MULT	X	
3133600000	Transportation equipment	MULT		
3133600100	Motor vehicles and parts	ADD		
3133700000	Furniture and related products	MULT	X	
3133900000	Miscellaneous manufacturing	MULT	X	
3231100000	Food manufacturing	MULT	X	
3231200000	Beverages and tobacco products	ADD	X	
3231300000	Textile mills	MULT	X	
3231400000	Textile product mills	MULT	X	
3231500000	Apparel	MULT	X	
3231600000	Leather and allied products	MULT	X	
3232200000	Paper and paper products	MULT	X	
3232300000	Printing and related support activities	MULT	X	
3232400000	Petroleum and coal products	MULT	X	
3232500000	Chemicals	ADD	X	
3232600000	Plastics and rubber products	MULT	X	
4142000000	Wholesale trade	MULT	X	
4200000000	Retail trade	MULT	X	
4300000000	Transportation and warehousing	MULT	X	
4422000000	Utilities	MULT	X	

5000000000	Information	MULT	X
5500000000	Financial activities	ADD	X
6000000000	Professional and business services	ADD	X
6500000000	Education and health services	MULT	X
7000000000	Leisure and hospitality	ADD	X
8000000000	Other services	MULT	X

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**Seasonal Adjustment - AWH**

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<b>NAICS Tabcode</b>	<b>Tabcode title</b>	<b>Mode</b>	<b>4/5 week adj</b>	<b>10/11 day adj</b>	<b>Easter / Labor Day adj</b>
1000000000	Natural resources and mining	MULT	X		X
2000000000	Construction	ADD	X		X
3132100000	Wood products	MULT	X		X
3132700000	Nonmetallic mineral products	MULT	X		X
3133100000	Primary metals	MULT	X		X
3133200000	Fabricated metal products	MULT	X		X
3133300000	Machinery	MULT	X		X
3133400000	Computer and electronic products	MULT	X		X
3133500000	Electrical equipment and appliances	MULT	X		X
3133600000	Transportation equipment	MULT	X		X
3133600100	Motor vehicles and parts	MULT	X		X
3133700000	Furniture and related products	MULT	X		X
3133900000	Miscellaneous manufacturing	MULT	X		X
3231100000	Food manufacturing	MULT	X		X
3231200000	Beverages and tobacco products	MULT	X		X
3231300000	Textile mills	ADD	X		X
3231400000	Textile product mills	MULT	X		X
3231500000	Apparel	MULT	X		X
3231600000	Leather and allied products	MULT	X		X
3232200000	Paper and paper products	MULT	X		X
3232300000	Printing and related	MULT	X		X

	support activities				
3232400000	Petroleum and coal products	MULT	X		X
3232500000	Chemicals	MULT	X		
3232600000	Plastics and rubber products	MULT	X		X
4142000000	Wholesale trade	MULT		X	X
4200000000	Retail trade	MULT		X	
4300000000	Transportation and warehousing	MULT		X	X
4422000000	Utilities	MULT	X		
5000000000	Information	MULT		X	
5500000000	Financial activities	MULT		X	
6000000000	Professional and business services	MULT		X	X
6500000000	Education and health services	MULT		X	
7000000000	Leisure and hospitality	MULT		X	
8000000000	Other services	MULT		X	X

<b>Seasonal Adjustment - AHE</b>				
<b>NAICS Tabcode</b>	<b>Tabcode title</b>	<b>Mode</b>	<b>4/5 week adj</b>	<b>10/11 day adj</b>
1000000000	Natural resources and mining	MULT	X	
2000000000	Construction	MULT	X	
3100000000	Durable goods	ADD	X	
3200000000	Nondurable goods	MULT	X	
4142000000	Wholesale trade	ADD		X
4200000000	Retail trade	MULT		X
4300000000	Transportation and warehousing	MULT	X	
4422000000	Utilities	ADD	X	
5000000000	Information	MULT		X
5500000000	Financial activities	MULT		X
6000000000	Professional and business services	MULT		X
6500000000	Education and health services	MULT	X	
7000000000	Leisure and hospitality	MULT	X	
8000000000	Other services	MULT		X



Seasonal Adjustment Comparison - AOT					
NAICS Tabcode	Tabcode title	Mode	4/5 week adj	10/11 day adj	Easter/Labor Day adj
31000000	Durable goods	MULT	X		X
32000000	Nondurable goods	MULT	X		X

<sup>1</sup> Seasonal adjustment occurs at the lowest available industry level.

<sup>2</sup> Residential and nonresidential specialty trade estimates are raked to the specialty trade estimates to ensure consistency.

<sup>3</sup> Special adjustment for the presence/absence of poll workers in local government

**Table 1. Percent differences between nonfarm employment benchmarks and estimates by industry supersector, March 1998-2007 <sup>(1)</sup>**

Industry	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total	(2)	0.2	0.4	-0.1	-0.2	-0.1	0.2	-0.1	0.6	-0.2
Total Private	0.1	.2	.3	-.2	-.4	-.2	.2	-.2	.7	-.2
Natural Resources & Mining						.9	.7	-.3	1.2	(2)
Construction						-.8	.6	.5	2.6	.1
Manufacturing						-1.1	-.4	-.3	-.1	-1
Trade, Transportation, & Utilities						(2)	.2	.3	.6	.5
Information						-2.6	-1.0	-2.1	-.5	-1.8
Financial Activities						.2	.1	-.8	.4	-1.3
Professional & Business Services						-.7	-.2	-.4	1.3	.2
Education & Health Services						.3	.2	(2)	.5	-.2
Leisure & Hospitality						.5	1.2	.4	.3	-.8
Other Services						1.4	.5	-1.3	.5	.3

Government	-2	.1	.6	.3	1.0	.3	.1	(2)	(2)	-2
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(1) Differences are based on comparisons of final published March estimates and benchmark levels, as originally published.

(2) Less than 0.05 percent.

**Table 2. Nonfarm employment benchmarks by industry, March 2007**

(Numbers in thousands)

Industry	Benchmark	Estimate	Difference	
			Amount	Percent
<b>Total nonfarm</b>	136,533	136,826	-293	-0.2
<b>Total private</b>	113,983	114,224	-241	-0.2
<b>Goods-producing</b>	21,941	22,072	-131	-0.6
<b>Service-providing</b>	114,592	114,754	-162	-0.1
<b>Private service-providing</b>	92,042	92,152	-110	-0.1
<b>Natural resources and mining</b>	701	701	0	(1)
Logging	59	62	-3	-5.1
<b>Mining</b>	642	639	3	0.5

Oil and gas extraction	142	146	-4	-2.8
Mining, except oil and gas	214	217	-3	-1.4
Coal mining	77	80	-3	-3.9
Support activities for mining	286	276	10	3.5
<b>Construction</b>	7,353	7,347	6	0.1
Construction of buildings	1,740	1,743	-3	-0.2
Heavy and civil engineering construction	926	920	6	0.6
Specialty trade contractors	4,687	4,684	3	0.1
<b>Manufacturing</b>	13,887	14,024	-137	-1.0
<b>Durable goods</b>	8,837	8,903	-66	-0.7
Wood products	517	522	-5	-1.0
Nonmetallic mineral products	496	490	6	1.2
Primary metals	460	454	6	1.3
Fabricated metal products	1,557	1,560	-3	-0.2
Machinery	1,187	1,221	-34	-2.9
Computer and electronic products	1,280	1,309	-29	-2.3
Computer and peripheral equipment	188	197	-9	-4.8

Communications equipment	129	138	-9	-7.0
Semiconductors and electronic components	450	466	-16	-3.6
Electronic instruments	443	438	5	1.1
Electrical equipment and appliances	428	437	-9	-2.1
Transportation equipment	1,733	1,724	9	0.5
Furniture and related products	538	535	3	0.6
Miscellaneous manufacturing	643	652	-9	-1.4
<b>Nondurable goods</b>	<b>5,050</b>	<b>5,121</b>	<b>-71</b>	<b>-1.4</b>
Food manufacturing	1,452	1,468	-16	-1.1
Beverages and tobacco products	190	192	-2	-1.1
Textile mills	176	178	-2	-1.1
Textile product mills	160	163	-3	-1.9
Apparel	219	218	1	0.5
Leather and allied products	35	37	-2	-5.7
Paper and paper products	459	456	3	0.7
Printing and related support activities	627	632	-5	-0.8
Petroleum and coal products	112	115	-3	-2.7
Chemicals	861	871	-10	-1.2
Plastics and rubber products	758	791	-33	-4.4

<b>Trade, transportation, and utilities</b>	26,292	26,152	140	0.5
<b>Wholesale trade</b>	5,955	5,934	21	0.4
Electronic markets and agents and brokers	818	794	24	2.9
<b>Retail trade</b>	15,295	15,188	107	0.7
Motor vehicle and parts dealers	1,900	1,895	5	0.3
Automobile dealers	1,238	1,239	-1	-0.1
Furniture and home furnishings stores	574	579	-5	-0.9
Electronics and appliance stores	546	537	9	1.6
Building material and garden supply stores	1,295	1,291	4	0.3
Food and beverage stores	2,806	2,827	-21	-0.7
Health and personal care stores	980	962	18	1.8
Gasoline stations	854	844	10	1.2
Clothing and clothing accessories stores	1,438	1,401	37	2.6
Sporting goods, hobby, book, and music stores	637	640	-3	-0.5
General merchandise stores	2,987	2,916	71	2.4
Department stores	1,555	1,535	20	1.3
Miscellaneous store retailers	851	864	-13	-1.5

Nonstore retailers	427	432	-5	-1.2
<b>Transportation and warehousing</b>	4,494	4,483	11	0.2
Air transportation	484	482	2	0.4
Rail transportation	235	228	7	3.0
Water transportation	61	66	-5	-8.2
Truck transportation	1,426	1,430	-4	-0.3
Transit and ground passenger transportation	420	405	15	3.6
Pipeline transportation	40	41	-1	-2.5
Scenic and sightseeing transportation	23	22	1	4.3
Support activities for transportation	577	578	-1	-0.2
Couriers and messengers	577	586	-9	-1.6
Warehousing and storage	652	647	5	0.8
<b>Utilities</b>	548	548	0	(1)
<b>Information</b>	3,024	3,078	-54	-1.8
Publishing industries, except Internet	902	907	-5	-0.6
Motion picture and sound recording industries	375	381	-6	-1.6
Broadcasting, except Internet	326	336	-10	-3.1

Telecommunications	1,032	1,061	-29	-2.8
Data processing, hosting, and related services	268	263	5	1.9
Other information services	122	131	-9	-7.4
<b>Financial activities</b>	8,303	8,414	-111	-1.3
<b>Finance and insurance</b>	6,164	6,239	-75	-1.2
Monetary authorities - central bank	21	22	-1	-4.8
Credit intermediation and related activities	2,920	2,958	-38	-1.3
Depository credit intermediation	1,820	1,824	-4	-0.2
Commercial banking	1,347	1,336	11	0.8
Securities, commodity contracts, investment	841	834	7	0.8
Insurance carriers and related activities	2,294	2,334	-40	-1.7
Funds, trusts, and other financial vehicles	88	91	-3	-3.4
<b>Real estate and rental and leasing</b>	2,139	2,175	-36	-1.7
Real estate	1,481	1,509	-28	-1.9
Rental and leasing services	630	636	-6	-1.0
Lessors of nonfinancial intangible assets	28	31	-3	-10.7



<b>Professional and business services</b>	17,670	17,626	44	0.2
<b>Professional and technical services</b>	7,638	7,591	47	0.6
Legal services	1,171	1,171	0	(1)
Accounting and bookkeeping services	1,040	1,041	-1	-0.1
Architectural and engineering services	1,403	1,403	0	(1)
Computer systems design and related services	1,337	1,316	21	1.6
Management and technical consulting services	922	936	-14	-1.5
<b>Management of companies and enterprises</b>	1,833	1,828	5	0.3
<b>Administrative and waste services</b>	8,199	8,208	-9	-0.1
Administrative and support services	7,852	7,863	-11	-0.1
Employment services	3,513	3,531	-18	-0.5
Temporary help services	2,525	2,506	19	0.8
Business support services	814	807	7	0.9
Services to buildings and dwellings	1,711	1,698	13	0.8
Waste management and remediation services	348	345	3	0.9
<b>Education and health services</b>	18,300	18,339	-39	-0.2

<b>Educational services</b>	3,078	3,134	-56	-1.8
<b>Health care and social assistance</b>	15,222	15,206	16	0.1
Ambulatory health care services	5,409	5,400	9	0.2
Offices of physicians	2,181	2,200	-19	-0.9
Outpatient care centers	505	495	10	2.0
Home health care services	900	905	-5	-0.6
Hospitals	4,471	4,483	-12	-0.3
Nursing and residential care facilities	2,927	2,953	-26	-0.9
Nursing care facilities	1,591	1,600	-9	-0.6
Social assistance	2,416	2,369	47	1.9
Child day care services	856	819	37	4.3
<b>Leisure and hospitality</b>	12,987	13,095	-108	-0.8
<b>Arts, entertainment, and recreation</b>	1,804	1,800	4	0.2
Performing arts and spectator sports	382	383	-1	-0.3
Museums, historical sites, zoos, and parks	119	119	0	(1)
Amusements, gambling, and recreation	1,304	1,298	6	0.5

<b>Accommodation and food services</b>	11,182	11,295	-113	-1.0
Accommodation	1,801	1,806	-5	-0.3
Food services and drinking places	9,381	9,489	-108	-1.2
<b>Other services</b>	5,466	5,448	18	0.3
Repair and maintenance	1,257	1,257	0	(1)
Personal and laundry services	1,297	1,283	14	1.1
Membership associations and organizations	2,913	2,908	5	0.2
<b>Government</b>	22,550	22,602	-52	-0.2
<b>Federal</b>	2,713	2,700	13	0.5
Federal, except U.S. Postal Service	1,952	1,938	14	0.7
U.S. Postal Service	761	762	-1	-0.1
<b>State government</b>	5,259	5,277	-18	-0.3
State government education	2,466	2,474	-8	-0.3
State government, excluding education	2,793	2,803	-10	-0.4

<b>Local government</b>	14,578	14,625	-47	-0.3
Local government education	8,325	8,407	-82	-1.0
Local government, excluding education	6,253	6,218	35	0.6

(1) Less than 0.05 percent.

**Table 3. Differences in seasonally adjusted levels and over-the-month changes, total nonfarm employment, January 2007-October 2007**

(In thousands)

	Levels			Over-the-month changes		
	As previously published	As revised	Difference	As previously published	As revised	Difference
<b>2007:</b>						
<b>January</b>	137,329	137,108	-221	162	126	-36
<b>February</b>	137,419	137,133	-286	90	25	-65
<b>March</b>	137,594	137,310	-284	175	177	2
<b>April</b>	137,716	137,356	-360	122	46	-76
<b>May</b>	137,904	137,518	-386	188	162	-26
<b>June</b>	137,973	137,625	-348	69	107	38
<b>July</b>	138,066	137,682	-384	93	57	-36
<b>August</b>	138,159	137,756	-403	93	74	-19
<b>September</b>	138,203	137,837	-366	44	81	37
<b>October</b>	138,362	137,977	-385	159	140	-19

**Table 4. Hours and earnings estimates, selected industries, March 2007**

<b>Industry</b>	<b>Average Weekly Hours</b>	<b>Average Hourly Earnings</b>
<b>Total private</b>	33.7	\$17.24
<b>Goods-producing</b>	40.4	18.38
<b>Natural resources and mining</b>	45.4	20.86
<b>Construction</b>	38.7	20.55
<b>Manufacturing</b>	41.1	17.09
<b>Durable goods</b>	41.4	18.02
<b>Wood products</b>	39.2	13.58
<b>Nonmetallic mineral products</b>	41.8	16.91
<b>Primary metals</b>	43.2	19.38
<b>Fabricated metal products</b>	41.5	16.36
<b>Machinery</b>	42.4	17.7
<b>Computer and electronic products</b>	40.4	19.57
<b>Electrical equipment and appliances</b>	40.8	15.96
<b>Transportation equipment</b>	43	22.65
<b>Furniture and related products</b>	38.8	14.3
<b>Miscellaneous manufacturing</b>	38.7	14.57
<b>Nondurable goods</b>	40.7	15.47
<b>Food manufacturing</b>	40.5	13.36
<b>Beverages and tobacco products</b>	40.4	18.46
<b>Textile mills</b>	40.6	12.81
<b>Textile product mills</b>	39.6	11.83
<b>Apparel</b>	36.9	10.79
<b>Leather and allied products</b>	38.2	11.83
<b>Paper and paper products</b>	42.7	18.17
<b>Printing and related support activities</b>	39.4	15.88
<b>Petroleum and coal products</b>	44	24.77
<b>Chemicals</b>	41.9	19.46

Plastics and rubber products	40.9	15.23
Private service-providing	32.3	16.95
Trade, transportation, and utilities	33.1	15.63
Wholesale trade	37.9	19.26
Retail trade	29.9	12.71
Transportation and warehousing	36.8	17.48
Utilities	42.2	27.68
Information	36.4	23.73
Financial activities	35.7	19.48
Professional and business services	34.6	19.88
Education and health services	32.4	17.91
Leisure and hospitality	25.3	10.23
Other services	30.9	15.35

**Text table A. Net Birth/Death Estimates, Post-Benchmark 2007**

		Natural Resources & Mining	Construction	Manufacturing	Trade, Transportation, & Utilities	Information	Financial Activities	Professional & Business Services	Education & Health Services	Leisure & Hospitality	Other Services	Monthly Amount Contributed
2007	April	2	37	-14	30	2	1	48	47	95	14	262
	May	1	38	5	26	2	5	8	6	76	7	174
	June	2	26	4	17	-1	5	16	-10	90	6	155
	July	1	2	-17	-11	-5	-5	-6	-3	55	-8	3
	August	1	14	3	16	4	6	17	11	26	4	102

	September	1	11	1	19	0	5	6	14	-30	2	29
	October	0	12	-8	22	1	11	38	24	-29	0	71
	November	0	-6	2	13	2	3	7	7	-11	0	17
	December	1	-7	2	19	2	17	9	7	16	4	70
	Cumulative Total	9	127	-22	151	7	48	143	103	288	29	883

**Last Modified Date:** February 1, 2008