March 2004 Benchmarks for the Nonfarm Payroll Survey

Don Kim

With the release of data for January 2005, 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 reflect more currently available 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 Employment Security Agencies.

Summary of the benchmark revisions

The March 2004 benchmark level for total nonfarm employment is 130,019,000; this figure is 203,000 above the NAICS sample-based estimate for March 2004, 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 2004, not seasonally adjusted, by industry. The majority of this year's benchmark revision is in leisure and hospitality. Estimates in leisure and hospitality were revised upward by 150,000, or 1.2 percent. Within leisure and hospitality, accommodations and food services contributed the greatest adjustment, with an upward revision of 113,000, or 1.1 percent. In addition, arts, entertainment, and recreation contributed an upward adjustment of 37,000, or 2.2 percent.

Benchmark revisions in other supersectors were smaller. Construction was revised upward by 39,000 or 0.6 percent. This was largely due to an upward revision of 64,000, or 1.5 percent, in specialty trade contractors, and was partially offset by a downward revision of 24,000, or 2.9 percent, in heavy and civil engineering construction. Trade, transportation, and

utilities were revised upward 38,000, or 0.2 percent. Most of the upward revision came from transportation and warehousing, which were revised upward 27,000, or 0.6 percent. Education and health services were revised upward 35,000, or 0.2 percent. The majority of the adjustment came from educational services, which contributed an upward revision of 21,000, or 0.7 percent. The other services supersector was revised upward 26,000, or 0.5 percent. Within other services, membership associations and organizations contributed 18,000, or 0.6 percent, while personal and laundry services contributed 17,000, or 1.3 percent. Government was revised upward 23,000, or 0.1 percent. Within government, local government was revised upward by 56,000, or 0.4 percent, and Federal government was revised upward by 15,000, or 0.6 percent. These upward adjustments were partially offset by State government, which contributed a downward adjustment of 48,000, or 0.9 percent. Only a minor upward revision of 8,000 occurred in financial activities. A downward revision of 21,000 in securities, commodity contracts, and investments was offset by an upward revision of 21,000 in credit intermediation and related activities. Natural resources and mining was revised upward by 4,000, or 0.7 percent.

Manufacturing was revised downward by 52,000 or 0.4 percent. Both durable and nondurable goods were revised downward by 26,000, representing a 0.3 percent adjustment in durable goods and a 0.5 percent adjustment in nondurable goods. Professional and business services were revised downward 36,000, or 0.2 percent. An upward revision of 38,000 in management of companies and enterprises partially offset a downward revision of 92,000 in administrative and waste services. Information was revised downward 32,000, or 1.0 percent. Most of the downward revision in information came from ISPs, search portals, and data processing, which were revised downward 17,000, or 4.4 percent.

Addition of residential and nonresidential specialty trade contractors

Concurrent with the release of the 2004 benchmark, the CES Program also began producing and publishing employment series for residential specialty trade contractors and nonresidential specialty trade contractors (see Exhibit 1 for publication detail). The two new employment series can be found in tables B-3 (employment, seasonally adjusted) and B-12 (employment, not seasonally adjusted) in the Employment and Earnings publication.

Exhibit 1. Component series to be published as of the 2004 benchmark release

New component industries		Aggregate industry		
Industry title	CES industry code	Industry title	NAICS code	CES industry code
Residential specialty trade contractors	20-238001	Specialty trade contractors	238	20-238000
Nonresidential specialty trade contractors	20-238002			

Examination of the history available for the new series illustrates the differing trends between the residential and nonresidential specialty trade contractors industry (NAICS 238) series and indicates the analytical value associated with these new industries.

As a whole, specialty trade contractors shows a slight decrease in employment (-2.9%) from March 2001 to March 2003, mirroring a general decline in employment in the Construction sector (-3.1%) during that time period. However, focusing on a decrease in employment at the 3-digit NAICS level masks a small increase in employment in the residential sector of specialty trade contractors. This growth in employment in the residential sector was overshadowed by a decrease in employment in the nonresidential sector of specialty trade contractors, leading to an

overall decline in employment at the 3-digit NAICS level during this time period. Without the new breakout, these trends would not be observable.

Estimates are made at the four-digit NAICS, regional, residential and nonresidential levels. As the residential series are subsets of previously published series, the estimates are made independently and raked, or controlled, to the traditional NAICS structure to ensure consistency between the series. Research indicated that the amount of raking needed to achieve this consistency was minimal. There are no estimates of hours and earnings for the new residential and nonresidential specialty trade contractor series.

To complement the two new construction industry employment series, the CES program has begun including employment estimates for residential building (NAICS 2361) and nonresidential building (NAICS 2362) in the Employment and Earnings tables. Traditionally, not seasonally adjusted employment estimates for these industries were published with a 1-month lag, and seasonally adjusted estimates were not available at all.

Other changes to the CES published series list

The 2004 benchmark brings a number of changes to the list of CES published series. There are two new aggregate series that will be published beginning with the 2004 benchmark release: motor vehicles and parts, and health care. Publishing the new series will facilitate the analysis of labor-market trends in these important industry groups.

Exhibit 2. Aggregate series to be published as of the 2004 benchmark release

New industry		Component industries		
Industry title	CES industry code	Industry title	NAICS code	CES industry code
Motor vehicles and parts	31-336001	Motor vehicles	3361	31-336100
		Motor vehicle bodies and trailers	3362	31-336200

		Motor vehicle parts	3363	31-336300
Health care	65-620001	Ambulatory health	621	65-621000
		Hospitals	622	65-622000
		Nursing and residential care facilities	623	65-623000

Furthermore, changes result from a review of sample employment and universe coverage for all estimation cells. The only all employee series that will no longer be published are those that are being collapsed into other cells. Exhibit 3 shows the cells that will be collapsed and renamed.

Exhibit 3. Cells renamed/collapsed as of the 2004 benchmark release

Tabcode	Title	Collapsed with	Title	New collapsed cell tabcode
31-336419	Other guided missile and space vehicle parts	31-336419	Guided missiles, space vehicles, and parts	31-336419
31-336414	Guided missiles and space vehicles	31-336419	Guided missiles, space vehicles, and parts	31-336419
31-336415	Space vehicle propulsion units and parts	31-336419	Guided missiles, space vehicles, and parts	31-336419

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 4 and 5 shows the series that will be discontinued.

Exhibit 4. Discontinued production worker, hours, and earnings series

Industry title	NAICS code	CES industry code
Computer terminals and other computer peripheral equipment	334113,9	31-334119
Other direct selling establishments	45439	42-454390
Air transportation	481	43-481000
Scheduled air transportation	4811	43-481100

Heavy machinery rental and leasing	53241	55-532410

Exhibit 5. Discontinued average overtime series

Industry title	NAICS code	CES industry code
Computer and peripheral equipment	3341	31-334100
Frozen specialty food	311412	32-311412

Changes to the average hourly earnings series for scheduled air transportation

In addition to the removal of scheduled air transportation, NAICS 4811, from publication, the average hourly earnings data has been revised to account for the low response rate in that industry. Estimates from March 2004 forward have been recalculated with a reweighting of the sample respondents to account for the response rate. The average weekly hours series is not affected due to the relatively consistent hours reports across the industry. These data are unpublished and available upon request.

Revisions in the post-benchmark period

Post-benchmark period estimates from April 2004 to October 2004 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 2004 to December 2004, the cumulative net birth/death model added 827,000, compared with 889,000 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 0.5 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 2004 benchmark. At the total private level, there was no change in average weekly hours from the previously published level, while average hourly earnings decreased by 1 cent from the previously published level.

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 Employment Security 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 non-office 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 assuming and applying the employment trends from the UI-covered part of the population in these industries to the non-covered 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 ARIMA model component is reviewed on a quarterly basis. 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.

The most significant potential drawback to this or any model-based approach is that time series modeling assumes a predictable continuation of historical patterns and relationships and therefore is likely to have some difficulty producing reliable estimates at economic turning points, or during periods when there are sudden changes in trend. BLS will continue researching alternative model-based techniques for the net birth/death component; it is likely to remain the most problematic part of the estimation process.

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. Employment, hours, and earnings estimates are also published monthly in *Employment and Earnings.*

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. For employment, seasonal adjustment factors are directly applied to the component levels. 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 12th of each month – inconsistencies arise because there are sometimes 4 and sometimes 5 weeks between the week including the 12th 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 previously used.

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 non-economic 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.

Additive and multiplicative models. Prior to the 2002 benchmark release, all CES series were adjusted using multiplicative seasonal adjustment models. Although the X-12 method provides for either an additive or a multiplicative adjustment, depending on which model best fits the individual series, the previous CES processing system was unable to utilize additive adjustments. A new processing system, introduced simultaneously with the NAICS conversion, is able to utilize both additive and multiplicative adjustments. See Exhibit 6 for a list of which series are adjusted with additive and multiplicative models, and designation of the calendar effects modeling described above.

Exhibit 6. Additive and multiplicative models.

Seasonal Adjustment - AE				
NAICS Tabcode	**Tabcode title**	**Mode**	**4/5 week adj**	**Other adj**
10113310	Logging	MULT	X	
10211000	Oil and gas extraction	MULT	X	
10212000	Mining, except oil and gas	-	X	Indirect[1]
10212100	Coal mining	MULT	X	
10213000	Support activities for mining	ADD	X	
20236100	Residential building	-	X	Indirect
20236200	Nonresidential	-	X	Indirect

	building			
20237000	Heavy and civil engineering construction	ADD	X	
20238000	Specialty trade contractors	-	X	Indirect
20238001	Residential specialty trade contractors	MULT	X	Raked[2]
20238002	Nonresidential specialty trade contractors	MULT	X	Raked
31321000	Wood products	ADD	X	
31327000	Nonmetallic mineral products	ADD	X	
31331000	Primary metals	MULT	X	
31332000	Fabricated metal products	ADD	X	
31333000	Machinery	MULT	X	
31334000	Computer and electronic products	-	X	Indirect
31334100	Computer and peripheral equipment	MULT	X	
31334200	Communications equipment	ADD	X	
31334400	Semiconductors and electronic components	MULT	X	
31334500	Electronic instruments	ADD	X	
31335000	Electrical equipment and appliances	MULT	X	
31336000	Transportation equipment	MULT		
31336001	Motor vehicles and parts	MULT		
31337000	Furniture and related products	MULT	X	
31339000	Miscellaneous manufacturing	MULT	X	
32311000	Food manufacturing	MULT	X	
32312000	Beverages and tobacco products	ADD	X	
32313000	Textile mills	MULT	X	
32314000	Textile product mills	ADD	X	
32315000	Apparel	MULT	X	
32316000	Leather and allied	MULT	X	

	products			
32322000	Paper and paper products	ADD	X	
32323000	Printing and related support activities	MULT	X	
32324000	Petroleum and coal products	MULT	X	
32325000	Chemicals	MULT	X	
32326000	Plastics and rubber products	MULT	X	
41423000	Durable goods	MULT	X	
41424000	Nondurable goods	MULT	X	
41425000	Electronic markets and agents and brokers	MULT	X	
42441000	Motor vehicle and parts dealers	-	X	Indirect
42441100	Automobile dealers	MULT	X	
42442000	Furniture and home furnishings stores	MULT	X	
42443000	Electronics and appliance stores	MULT	X	
42444000	Building material and garden supply stores	MULT	X	
42445000	Food and beverage stores	MULT	X	
42446000	Health and personal care stores	MULT	X	
42447000	Gasoline stations	MULT	X	
42448000	Clothing and clothing accessories stores	MULT	X	
42451000	Sporting goods, hobby, book, and music stores	MULT	X	
42452000	General merchandise stores	-	X	Indirect
42452100	Department stores	MULT	X	
42453000	Miscellaneous store retailers	ADD	X	
42454000	Nonstore retailers	MULT	X	
43481000	Air transportation	MULT	X	
43482000	Rail transportation	MULT	X	
43483000	Water transportation	MULT	X	

43484000	Truck transportation	ADD	X	
43485000	Transit and ground passenger transportation	ADD		
43486000	Pipeline transportation	MULT	X	
43487000	Scenic and sightseeing transportation	MULT	X	
43488000	Support activities for transportation	MULT	X	
43492000	Couriers and messengers	ADD	X	
43493000	Warehousing and storage	MULT	X	
44221000	Utilities	MULT	X	
50511000	Publishing industries, except Internet	MULT	X	
50512000	Motion picture and sound recording industries	MULT	X	
50515000	Broadcasting, except Internet	MULT	X	
50516000	Internet publishing and broadcasting	MULT	X	
50517000	Telecommunications	MULT	X	
50518000	ISPs, search portals, and data processing	MULT	X	
50519000	Other information services	MULT	X	
55521000	Monetary authorities - central bank	MULT	X	
55522000	Credit intermediation and related activities	-	X	Indirect
55522100	Depository credit intermediation	MULT	X	
55522110	Commercial banking	MULT	X	
55523000	Securities, commodity contracts, investments	MULT	X	
55524000	Insurance carriers and related activities	MULT	X	
55525000	Funds, trusts, and other financial	MULT	X	

	vehicles			
55531000	Real estate	ADD	X	
55532000	Rental and leasing services	MULT	X	
55533000	Lessors of nonfinancial intangible assets	MULT	X	
60541000	Professional and technical services	-	X	Indirect
60541100	Legal services	MULT	X	
60541200	Accounting and bookkeeping services	ADD	X	
60541300	Architectural and engineering services	MULT	X	
60541500	Computer systems design and related services	MULT	X	
60541600	Management and technical consulting services	ADD	X	
60551000	Management of companies and enterprises	MULT	X	
60561000	Administrative and support services	-	X	Indirect
60561300	Employment services	MULT	X	
60561320	Temporary help services	MULT	X	
60561400	Business support services	ADD	X	
60561700	Services to buildings and dwellings	MULT	X	
60562000	Waste management and remediation services	MULT	X	
65611000	Educational services	MULT	X	
65621000	Ambulatory health care services	-	X	Indirect
65621100	Offices of physicians	ADD	X	
65621400	Outpatient care centers	MULT	X	
65621600	Home health care services	MULT	X	
65622000	Hospitals	MULT	X	

65623000	Nursing and residential care facilities	-	X	Indirect
65623100	Nursing care facilities	ADD	X	
65624000	Social assistance	-	X	Indirect
65624400	Child day care services	ADD	X	
70711000	Performing arts and spectator sports	MULT	X	
70712000	Museums, historical sites, zoos, and parks	MULT	X	
70713000	Amusements, gambling, and recreation	MULT	X	
70721000	Accommodations	MULT	X	
70722000	Food services and drinking places	ADD	X	
80811000	Repair and maintenance	ADD	X	
80812000	Personal and laundry services	MULT	X	
80813000	Membership associations and organizations	ADD		
90911000	Federal, except U.S. Postal Service	MULT	X	
90919120	U.S. Postal Service	MULT	X	
90921611	State government education	ADD	X	
90922000	State government, excluding education	MULT	X	
90931611	Local government education	ADD	X	
90932000	Local government, excluding education	ADD	X	Election adjustment[3]

Seasonal Adjustment - WW

NAICS Tabcode		Mode	4/5 week adj	Other adj
10000000	Natural resources and mining	MULT	X	
10210000	Mining	MULT	X	
20000000	Construction	MULT	X	

31000000	Durable goods	MULT	X	
32000000	Nondurable goods	MULT	X	
41420000	Wholesale trade	MULT	X	
42000000	Retail trade	MULT	X	
43000000	Transportation and warehousing	ADD	X	
44220000	Utilities	MULT	X	
50000000	Information	MULT	X	
55520000	Finance and insurance	MULT	X	
55530000	Real estate and rental and leasing	ADD	X	
60540000	Professional and technical services	MULT	X	
60550000	Management of companies and enterprises	ADD	X	
60560000	Administrative and waste services	ADD	X	
65610000	Educational services	MULT	X	
65620000	Health care and social assistance	MULT	X	
70710000	Arts, entertainment, and recreation	MULT	X	
70720000	Accommodations and food services	MULT	X	
80000000	Other services	MULT	X	
90910000	Federal	MULT	X	
90920000	State government	MULT	X	
90930000	Local government	MULT	X	Election adjustment

Seasonal Adjustment - PW				
NAICS Tabcode		**Mode**	**4/5 week adj**	**Other adj**
10000000	Natural resources and mining	ADD	X	
20000000	Construction	ADD	X	
31321000	Wood products	ADD	X	
31327000	Nonmetallic mineral products	ADD	X	
31331000	Primary metals	MULT	X	
31332000	Fabricated metal products	MULT	X	
31333000	Machinery	MULT	X	
31334000	Computer and electronic products	MULT	X	
31335000	Electrical equipment and appliances	MULT	X	
31336000	Transportation equipment	MULT		
31336001	Motor vehicles and parts	MULT		
31337000	Furniture and related products	MULT	X	
31339000	Miscellaneous manufacturing	MULT	X	
32311000	Food manufacturing	MULT	X	
32312000	Beverages and tobacco products	ADD	X	
32313000	Textile mills	MULT	X	
32314000	Textile product mills	ADD	X	
32315000	Apparel	MULT	X	
32316000	Leather and allied products	MULT	X	
32322000	Paper and paper products	ADD	X	
32323000	Printing and related support activities	MULT	X	
32324000	Petroleum and coal products	MULT	X	
32325000	Chemicals	ADD	X	
32326000	Plastics and rubber products	MULT	X	

41420000	Wholesale trade	MULT	X		
42000000	Retail trade	MULT	X		
43000000	Transportation and warehousing	MULT	X		
44220000	Utilities	MULT	X		
50000000	Information	MULT	X		
55000000	Financial activities	ADD	X		
60000000	Professional and business services	MULT	X		
65000000	Education and health services	MULT	X		
65620001	Health care	MULT	X		
70000000	Leisure and hospitality	MULT	X		
80000000	Other services	ADD	X		

Seasonal Adjustment - AWH

NAICS Tabcode		Mode	4/5 week adj	10/11 day adj	Easter/ Labor Day adj
10000000	Natural resources and mining	MULT	X		X
20000000	Construction	ADD	X		X
31321000	Wood products	MULT	X		X
31327000	Nonmetallic mineral products	MULT	X		X
31331000	Primary metals	MULT	X		X
31332000	Fabricated metal products	MULT	X		X
31333000	Machinery	MULT	X		X
31334000	Computer and electronic products	MULT	X		X
31335000	Electrical equipment and appliances	MULT	X		X
31336000	Transportation equipment	MULT	X		X
31336001	Motor vehicles and parts	MULT	X		X
31337000	Furniture and related products	MULT	X		X
31339000	Miscellaneous manufacturing	MULT	X		X
32311000	Food manufacturing	MULT	X		X
32312000	Beverages and	ADD	X		X

	tobacco products				
32313000	Textile mills	MULT	X		X
32314000	Textile product mills	MULT	X		X
32315000	Apparel	MULT	X		X
32316000	Leather and allied products	MULT	X		X
32322000	Paper and paper products	MULT	X		X
32323000	Printing and related support activities	MULT	X		X
32324000	Petroleum and coal products	MULT	X		X
32325000	Chemicals	MULT	X		
32326000	Plastics and rubber products	MULT	X		X
41420000	Wholesale trade	MULT		X	X
42000000	Retail trade	MULT		X	
43000000	Transportation and warehousing	MULT		X	X
44220000	Utilities	MULT	X		
50000000	Information	MULT		X	
55000000	Financial activities	MULT		X	
60000000	Professional and business services	MULT		X	X
65000000	Education and health services	MULT		X	
65620001	Health care	MULT		X	
70000000	Leisure and hospitality	MULT		X	
80000000	Other services	MULT		X	X

Seasonal Adjustment - AHE				
NAICS Tabcode		**Mode**	**4/5 week adj**	**10/11 day adj**
10000000	Natural resources and mining	ADD	X	
20000000	Construction	ADD	X	
31000000	Durable goods	ADD	X	
32000000	Nondurable goods	MULT	X	
41420000	Wholesale trade	ADD		X
42000000	Retail trade	ADD	X	
43000000	Transportation and warehousing	MULT	X	
44220000	Utilities	MULT	X	
50000000	Information	MULT	X	
55000000	Financial activities	MULT		X
60000000	Professional and business services	MULT		X
65000000	Education and health services	MULT	X	
70000000	Leisure and hospitality	ADD	X	
80000000	Other services	MULT		X

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

[1] Seasonal adjustment occurs at the lowest available industry level.
[2] Residential and nonresidential specialty trade estimates are raked to the specialty trade estimates to ensure consistency.
[3] Special adjustment for the presence/absence of poll workers in local government

Table 1. Percent differences between nonfarm employment benchmarks and estimates by industry division, March 1995-2004 [1]

Industry	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Total	0.5	([2])	0.4	([2])	0.2	0.4	-0.1	-0.2	-0.1	0.2
Total Private	0.5	0.1	0.5	0.1	0.2	0.3	-0.2	-0.4	-0.2	0.2
Government	0.2	-0.1	-0.4	-0.2	0.1	0.6	0.3	1.0	0.3	0.1

(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 2004

(Numbers in thousands)

Industry	Benchmark	Estimate	Difference	
			Amount	Percent
Total nonfarm	130,019	129,816	203	.2
Total private	108,027	107,847	180	.2
Goods-producing	21,341	21,350	-9	([1])
Service-providing	108,678	108,466	212	.2
Private service-providing	86,686	86,497	189	.2
Natural resources and mining	570	566	4	.7
Logging	64	61	3	4.7
Mining	505	504	1	.2
Oil and gas extraction	120	129	-9	-7.5
Mining, except oil and gas	196	197	-1	-.5
Coal mining	69	70	-1	-1.4
Support activities for mining	189	179	10	5.3

Construction	6,551	6,512	39	.6
Construction of buildings	1,548	1,548	0	0
Heavy and civil engineering construction	818	842	-24	-2.9
Specialty trade contractors	4,186	4,122	64	1.5
Manufacturing	14,220	14,272	-52	-.4
Durable goods	8,844	8,870	-26	-.3
Wood products	535	531	4	.7
Nonmetallic mineral products	486	481	5	1.0
Primary metals	464	461	3	.6
Fabricated metal products	1,476	1,475	1	.1
Machinery	1,133	1,147	-14	-1.2
Computer and electronic products	1,317	1,336	-19	-1.4
Computer and peripheral equipment	213	219	-6	-2.8
Communications equipment	148	155	-7	-4.7
Semiconductors and electronic components	449	451	-2	-.4
Electronic instruments	427	426	1	.2
Electrical equipment and appliances	445	446	-1	-.2
Transportation equipment	1,765	1,770	-5	-.3
Furniture and related products	571	573	-2	-.4
Miscellaneous manufacturing	653	651	2	.3
Nondurable goods	5,376	5,402	-26	-.5

Food manufacturing	1,470	1,475	-5	-.3
Beverages and tobacco products	189	193	-4	-2.1
Textile mills	241	238	3	1.2
Textile product mills	177	179	-2	-1.1
Apparel	294	295	-1	-.3
Leather and allied products	43	45	-2	-4.7
Paper and paper products	496	506	-10	-2.0
Printing and related support activities	663	661	2	.3
Petroleum and coal products	110	111	-1	-.9
Chemicals	890	896	-6	-.7
Plastics and rubber products	803	804	-1	-.1
Trade, transportation, and utilities	25,130	25,092	38	.2
Wholesale trade	5,602	5,597	5	.1
Electronic markets and agents and brokers	688	663	25	3.6
Retail trade	14,771	14,753	18	.1
Motor vehicle and parts dealers	1,891	1,893	-2	-.1
Automobile dealers	1,259	1,262	-3	-.2
Furniture and home furnishings stores	555	541	14	2.5
Electronics and appliance stores	511	510	1	.2
Building material and garden supply stores	1,193	1,212	-19	-1.6
Food and beverage stores	2,797	2,805	-8	-.3
Health and personal care stores	937	953	-16	-1.7

Gasoline stations	869	863	6	.7
Clothing and clothing accessories stores	1,311	1,285	26	2.0
Sporting goods, hobby, book, and music stores	626	622	4	.6
General merchandise stores	2,766	2,743	23	.8
Department stores	1,556	1,550	6	.4
Miscellaneous store retailers	896	907	-11	-1.2
Nonstore retailers	420	421	-1	-.2
Transportation and warehousing	4,190	4,163	27	.6
Air transportation	513	510	3	.6
Rail transportation	222	215	7	3.2
Water transportation	54	48	6	11.1
Truck transportation	1,313	1,320	-7	-.5
Transit and ground passenger transportation	400	394	6	1.5
Pipeline transportation	38	38	0	0
Scenic and sightseeing transportation	22	26	-4	-18.2
Support activities for transportation	527	514	13	2.5
Couriers and messengers	554	570	-16	-2.9
Warehousing and storage	548	529	19	3.5
Utilities	567	579	-12	-2.1
Information	3,126	3,158	-32	-1.0
Publishing industries, except Internet	909	914	-5	-.6
Motion picture and sound recording industries	374	374	0	0
Broadcasting, except Internet	324	333	-9	-2.8

Internet publishing and broadcasting	29	32	-3	-10.3
Telecommunications	1,053	1,053	0	0
ISPs, search portals, and data processing	387	404	-17	-4.4
Other information services	50	49	1	2.0
Financial activities	7,966	7,958	8	.1
Finance and insurance	5,929	5,923	6	.1
Monetary authorities--central bank	22	22	0	0
Credit intermediation and related activities	2,807	2,786	21	.7
Depository credit intermediation	1,747	1,759	-12	-.7
Commercial banking	1,277	1,280	-3	-.2
Securities, commodity contracts, investments	757	778	-21	-2.8
Insurance carriers and related activities	2,257	2,258	-1	([1])
Funds, trusts, and other financial vehicles	86	79	7	8.1
Real estate and rental and leasing	2,037	2,036	1	([1])
Real estate	1,382	1,385	-3	-.2
Rental and leasing services	629	622	7	1.1
Lessors of nonfinancial intangible assets	26	29	-3	-11.5
Professional and business services	15,995	16,031	-36	-.2
Professional and technical services	6,771	6,752	19	.3
Legal services	1,149	1,132	17	1.5
Accounting and bookkeeping services	927	928	-1	-.1
Architectural and engineering services	1,225	1,229	-4	-.3
Computer systems design and related services	1,129	1,105	24	2.1
Management and technical consulting services	760	768	-8	-1.1

Management of companies and enterprises	1,702	1,664	38	2.2
Administrative and waste services	7,523	7,615	-92	-1.2
Administrative and support services	7,205	7,297	-92	-1.3
Employment services	3,231	3,348	-117	-3.6
Temporary help services	2,207	2,268	-61	-2.8
Business support services	755	748	7	.9
Services to buildings and dwellings	1,557	1,543	14	.9
Waste management and remediation services	318	318	0	0
Education and health services	16,988	16,953	35	.2
Educational services	2,904	2,883	21	.7
Health care and social assistance	14,084	14,070	14	.1
Ambulatory health care services	4,890	4,857	33	.7
Offices of physicians	2,036	2,040	-4	.2
Outpatient care centers	443	431	12	2.7
Home health care services	757	739	18	2.4
Hospitals	4,268	4,293	-25	-.6
Nursing and residential care facilities	2,799	2,793	6	.2
Nursing care facilities	1,570	1,579	-9	-.6
Social assistance	2,127	2,127	0	0
Child day care services	772	789	-17	-2.2
Leisure and hospitality	12,077	11,927	150	1.2
Arts, entertainment, and recreation	1,694	1,657	37	2.2
Performing arts and spectator sports	353	348	5	1.4

Museums, historical sites, zoos, and parks	110	108	2	1.8
Amusements, gambling, and recreation	1,232	1,201	31	2.5
Accommodations and food services	10,383	10,270	113	1.1
Accommodations	1,727	1,694	33	1.9
Food services and drinking places	8,656	8,576	80	.9
Other services	5,404	5,378	26	.5
Repair and maintenance	1,232	1,241	-9	-.7
Personal and laundry services	1,264	1,247	17	1.3
Membership associations and organizations	2,908	2,890	18	.6
Government	21,992	21,969	23	.1
Federal	2,713	2,698	15	.6
Federal, except U.S. Postal Service	1,928	1,911	17	.9
U.S. Postal Service	785	787	-2	-.3
State government	5,116	5,164	-48	-.9
State government education	2,392	2,429	-37	-1.5
State government, excluding education	2,725	2,735	-10	-.4
Local government	14,163	14,107	56	.4
Local government education	8,111	8,075	36	.4
Local government, excluding education	6,052	6,032	20	.3

([1]) Less than 0.05 percent.

Table 3. Differences in seasonally adjusted levels and over-the-month changes, total nonfarm employment, January 2004-December 2004

(In thousands)

	Levels		Over-the-month changes		
	As previously published	As revised	As previously published	As revised	Difference
2004:					
January	130,194	130,372	159	117	-42
February	130,277	130,466	83	94	11
March	130,630	130,786	353	320	-33
April	130,954	131,123	324	337	13
May	131,162	131,373	208	250	42
June	131,258	131,479	96	106	10
July	131,343	131,562	85	83	-2
August	131,541	131,750	198	188	-10
September	131,660	131,880	119	130	11
October	131,972	132,162	312	282	-30
November(p)	132,109	132,294	137	132	-5
December(p)	132,266	132,427	157	133	-24

(p): Preliminary

Table 4. Hours and earnings estimates, selected industries, March 2004

Industry	Average weekly hours	Average hourly earnings
Total private	33.5	$15.54
Goods-producing	40.1	17.00
Natural resources and mining	43.9	18.10
Construction	38.3	19.06
Manufacturing	40.8	16.00
Durable goods	41.4	16.68
Wood products	40.6	12.93
Nonmetallic mineral products	42.5	16.00
Primary metals	43.1	18.33
Fabricated metal products	41.0	15.25
Machinery	41.9	16.50
Computer and electronic products	40.8	16.94
Electrical equipment and appliances	40.6	14.71
Transportation equipment	43.0	21.29

Furniture and related products	39.5	12.97
Miscellaneous manufacturing	38.8	13.79
Nondurable goods	40.0	14.90
Food manufacturing	38.7	12.91
Beverages and tobacco products	38.9	19.10
Textile mills	40.7	12.08
Textile product mills	38.8	11.35
Apparel	36.5	9.59
Leather and allied products	39.8	11.62
Paper and paper products	41.6	17.63
Printing and related support activities	38.6	15.63
Petroleum and coal products	43.5	24.79
Chemicals	43.0	18.83
Plastics and rubber products	40.8	14.45
Private service-providing	32.1	15.16
Trade, transportation, and utilities	33.2	14.48

Wholesale trade	37.7	17.46
Retail trade	30.4	12.02
Transportation and warehousing	36.7	16.35
Utilities	40.9	25.38
Information	35.9	21.16
Financial activities	35.2	17.38
Professional and business services	34.0	17.32
Education and health services	32.1	15.99
Leisure and hospitality	25.4	8.90
Other services	30.9	13.93

Text Table A. Net Birth/Death Estimates, Post-Benchmark 2004

(In thousands)

2004:	Natural Resources & Mining	Construction	Manufacturing	Trade, Transportation, & Utilities	Information	Financial Activities	Professional & Business Services	Education & Health Services	Leisure & Hospitality	Other Services	Monthly Amount Contributed
April	0	38	3	15	2	10	66	37	45	9	225
May	1	39	8	26	3	7	26	11	77	6	204
June	1	31	7	20	1	8	24	-2	84	7	181
July	0	-7	-22	-25	-6	-12	-32	-10	45	-11	-80
August	1	16	4	18	3	8	24	17	27	5	123
September	0	10	6	19	-2	4	14	15	-24	2	44
October	0	2	-10	11	2	8	41	29	-25	-3	55
November	0	-7	2	13	2	5	-5	9	-12	2	9
December	0	-7	2	19	2	13	9	8	16	4	66
Cumulative Total	3	115	0	116	7	51	167	114	233	21	827