

Benchmark Article

BLS National Establishment Survey Estimates Revised to Incorporate March 2012 Benchmarks

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Introduction

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With the release of data for January 2013 on February 1, 2013, 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 unemployment insurance (UI) tax reports that nearly all employers are required to file with State Workforce Agencies.

Summary of the benchmark revisions

The March 2012 benchmark level for Total nonfarm employment is 132,505,000; this figure is 424,000 above the sample-based estimate for March 2012, an adjustment of 0.3 percent. [Table 1](#) shows the Total nonfarm percentage benchmark revisions for the past ten years.

Table 1. Percent differences between nonfarm employment benchmarks and estimates by industry supersector, March 2002-2012⁽¹⁾

CES Industry Code	CES Industry Title	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
00-000000	Total nonfarm	-0.2	-0.1	0.2	-0.1	0.6	-0.2	-0.1	-0.7	-0.3	0.1	0.3
	(Level difference in thousands)	(-313)	(-122)	(203)	(-158)	(752)	(-293)	(-89)	(-902)	(-378)	(162)	(424)
05-000000	Total private	-0.4	-0.2	.2	-0.2	.7	-0.2	-0.1	-0.9	-0.4	.1	.4
10-000000	Mining and logging		.9	.7	-0.3	1.2	⁽²⁾	.4	-3.5	-3.0	-0.4	1.6
20-000000	Construction		-0.8	.6	.5	2.6	.1	.7	-2.9	-1.3	-0.5	1.8
30-000000	Manufacturing		-1.1	-0.4	-0.3	-0.1	-1.0	-0.1	-0.7	-1.0	.1	-0.2
40-000000	Trade, transportation, and utilities		⁽²⁾	.2	.3	.6	.5	.2	-1.2	-0.6	.4	.6
50-000000	Information		-2.6	-1.0	-2.1	-0.5	-1.8	.3	-1.5	-0.4	-0.4	1.8
55-000000	Financial activities		.2	.1	-0.8	.4	-1.3	-0.3	-0.1	.4	.9	.6
60-000000	Professional and business services		-0.7	-0.2	-0.4	1.3	.2	-0.4	-0.8	⁽²⁾	.7	⁽²⁾
65-000000	Education and health services		.3	.2	⁽²⁾	.5	-0.2	-0.1	-0.3	⁽²⁾	-0.5	⁽²⁾
70-000000	Leisure and hospitality		.5	1.2	.4	.3	-0.8	-1.1	-0.6	-0.6	.7	.8
80-000000	Other services	1.0	1.4	.5	-1.3	.5	.3	.2	-0.8	.2	-2.0	1.1
90-000000	Government		.3	.1	⁽²⁾	⁽²⁾	-0.2	.2	.1	.1	.1	-0.3

⁽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](#) shows the nonfarm employment benchmarks for March 2012, not seasonally adjusted, by industry. The majority of supersectors had upward revisions, with the exception of Education and health services, Manufacturing, and Government. The largest upward revision occurred in Trade, transportation, and utilities, 145,000, or 0.6 percent. Within this sector, the revision was concentrated in Retail trade, which was revised upward by 78,000 or 0.5 percent. Leisure and hospitality was revised upward by 104,000 or 0.8 percent, with the largest positive revision of 64,000 or 0.7 percent in Food services and drinking places. Construction had an upward revision of 93,000 or 1.8 percent. The largest share of this revision occurred in Specialty trade contractors which had a revision of 60,000 or 1.8 percent. Other services (Repair and maintenance, Personal and laundry services, and Membership associations and organizations) revised upward by 59,000 or 1.1 percent. Information and Financial activities had upward revisions of 47,000 or 1.8 percent and 45,000 or 0.6 percent, respectively. Employment in Mining and logging revised up by 13,000 (1.6 percent). The smallest upward revision occurred in and Professional and business services, 2,000 (less than 0.05 percent).

Three supersectors saw negative revisions. The largest downward revision occurred in Government, -57,000 or -0.3 percent. Within Government, Local government experienced the largest downward revision of -48,000 or -0.3 percent. The largest share of this revision was in Local government education with a revision of -66,000 or -0.8 percent. Manufacturing had a downward revision of -25,000 or -0.2 percent, which was mostly concentrated in Nondurable goods, -20,000 or -0.5 percent. Within Nondurable goods the largest downward revisions occurred in Chemicals, -15,000 or -1.9 percent, and Paper and paper products, -12,000 or -3.2 percent. Education and health services had the smallest downward revision of -2,000 (less than 0.05 percent), with largely offsetting revisions in Educational services, 28,000 or 0.8 percent, and Health care and social assistance, -30,000 or -0.2 percent.

Table 2. Nonfarm employment benchmarks by industry, March 2012 (in thousands)

CES Industry Code	CES Industry Title	Benchmark	Estimate	Differences	
				Amount	Percent
00-000000	Total nonfarm	132,505	132,081	424	0.3
05-000000	Total private	110,157	109,676	481	.4
06-000000	Goods-producing	17,971	17,890	81	.5
07-000000	Service-providing	114,534	114,191	343	.3
08-000000	Private service-providing	92,186	91,786	400	.4
10-000000	Mining and logging	836	823	13	1.6
10-113300	Logging	47	46	1	2.1
10-210000	Mining	788	776	12	1.5
10-211000	Oil and gas extraction	184	191	-7	-3.8
10-212000	Mining, except oil and gas	216	212	4	1.9
10-212100	Coal mining	89	86	3	3.4
10-213000	Support activities for mining	389	373	16	4.1
20-000000	Construction	5,313	5,220	93	1.8

CES Industry Code	CES Industry Title	Benchmark	Estimate	Differences	
				Amount	Percent
20-236000	Construction of buildings	1,182	1,172	10	.8
20-237000	Heavy and civil engineering construction	785	761	24	3.1
20-238000	Specialty trade contractors	3,347	3,287	60	1.8
30-000000	Manufacturing	11,822	11,847	-25	-.2
31-000000	Durable goods	7,415	7,420	-5	-.1
31-321000	Wood products	332	326	6	1.8
31-327000	Nonmetallic mineral products	358	358	0	(1)
31-331000	Primary metals	400	404	-4	-1.0
31-332000	Fabricated metal products	1,393	1,384	9	.6
31-333000	Machinery	1,094	1,097	-3	-.3
31-334000	Computer and electronic products	1,097	1,108	-11	-1.0
31-334100	Computer and peripheral equipment	157	163	-6	-3.8
31-334200	Communications equipment	111	110	1	.9
31-334400	Semiconductors and electronic components	385	387	-2	-.5
31-334500	Electronic instruments	403	402	1	.2
31-335000	Electrical equipment and appliances	370	373	-3	-.8
31-336000	Transportation equipment	1,447	1,448	-1	-.1
31-337000	Furniture and related products	349	348	1	.3
31-339000	Miscellaneous durable goods manufacturing	575	575	0	(1)
32-000000	Nondurable goods	4,407	4,427	-20	-.5
32-311000	Food manufacturing	1,434	1,426	8	.6
32-313000	Textile mills	119	120	-1	-.8
32-314000	Textile product mills	116	113	3	2.6
32-315000	Apparel	150	150	0	(1)
32-322000	Paper and paper products	380	392	-12	-3.2
32-323000	Printing and related support activities	462	454	8	1.7
32-324000	Petroleum and coal products	110	111	-1	-.9
32-325000	Chemicals	783	798	-15	-1.9

CES Industry Code	CES Industry Title	Benchmark	Estimate	Differences	
				Amount	Percent
32-326000	Plastics and rubber products	641	643	-2	-.3
32-329000	Miscellaneous nondurable goods manufacturing	214	220	-6	-2.8
32-329300	Leather and allied products	30	30	0	(1)
40-000000	Trade, transportation, and utilities	25,082	24,937	145	.6
41-420000	Wholesale trade	5,608	5,563	45	.8
41-425000	Electronic markets and agents and brokers	859	849	10	1.2
42-000000	Retail trade	14,574	14,496	78	.5
42-441000	Motor vehicle and parts dealers	1,715	1,705	10	.6
42-441100	Automobile dealers	1,080	1,075	5	.5
42-442000	Furniture and home furnishings stores	432	443	-11	-2.5
42-443000	Electronics and appliance stores	510	504	6	1.2
42-444000	Building material and garden supply stores	1,167	1,151	16	1.4
42-445000	Food and beverage stores	2,814	2,834	-20	-.7
42-446000	Health and personal care stores	989	988	1	.1
42-447000	Gasoline stations	827	818	9	1.1
42-448000	Clothing and clothing accessories stores	1,330	1,315	15	1.1
42-451000	Sporting goods, hobby, book, and music stores	560	549	11	2.0
42-452000	General merchandise stores	3,032	3,015	17	.6
42-452100	Department stores	1,477	1,503	-26	-1.8
42-453000	Miscellaneous store retailers	766	749	17	2.2
42-454000	Nonstore retailers	432	426	6	1.4
43-000000	Transportation and warehousing	4,348	4,318	30	.7
43-481000	Air transportation	459	457	2	.4
43-482000	Rail transportation	230	233	-3	-1.3
43-483000	Water transportation	62	66	-4	-6.5
43-484000	Truck transportation	1,313	1,308	5	.4
43-485000	Transit and ground passenger transportation	456	444	12	2.6

CES Industry Code	CES Industry Title	Benchmark	Estimate	Differences	
				Amount	Percent
43-486000	Pipeline transportation	44	44	0	(1)
43-487000	Scenic and sightseeing transportation	23	26	-3	-13.0
43-488000	Support activities for transportation	573	578	-5	-.9
43-492000	Couriers and messengers	521	519	2	.4
43-493000	Warehousing and storage	667	644	23	3.4
44-220000	Utilities	552	561	-9	-1.6
50-000000	Information	2,672	2,625	47	1.8
50-511000	Publishing industries, except Internet	738	739	-1	-.1
50-512000	Motion picture and sound recording industries	359	356	3	.8
50-515000	Broadcasting, except Internet	287	282	5	1.7
50-517000	Telecommunications	866	839	27	3.1
50-518000	Data processing, hosting and related services	252	243	9	3.6
50-519000	Other information services	171	167	4	2.3
55-000000	Financial activities	7,726	7,681	45	.6
55-520000	Finance and insurance	5,812	5,762	50	.9
55-521000	Monetary authorities - central bank	17	19	-2	-11.8
55-522000	Credit intermediation and related activities	2,570	2,585	-15	-.6
55-522100	Depository credit intermediation	1,742	1,752	-10	-.6
55-522110	Commercial banking	1,325	1,325	0	(1)
55-523000	Securities, commodity contracts, investments	812	800	12	1.5
55-524000	Insurance carriers and related activities	2,327	2,274	53	2.3
55-525000	Funds, trusts, and other financial vehicles	87	85	2	2.3
55-530000	Real estate and rental and leasing	1,914	1,918	-4	-.2
55-531000	Real estate	1,392	1,395	-3	-.2
55-532000	Rental and leasing services	497	500	-3	-.6
55-533000	Lessors of nonfinancial intangible assets	24	24	0	(1)

CES Industry Code	CES Industry Title	Benchmark	Estimate	Differences	
				Amount	Percent
60-000000	Professional and business services	17,601	17,599	2	(1)
60-540000	Professional and technical services	7,883	7,964	-81	-1.0
60-541100	Legal services	1,113	1,111	2	.2
60-541200	Accounting and bookkeeping services	1,022	1,092	-70	-6.8
60-541300	Architectural and engineering services	1,298	1,299	-1	-.1
60-541500	Computer systems design and related services	1,588	1,569	19	1.2
60-541600	Management and technical consulting services	1,094	1,110	-16	-1.5
60-550000	Management of companies and enterprises	1,994	1,934	60	3.0
60-560000	Administrative and waste services	7,725	7,701	24	.3
60-561000	Administrative and support services	7,362	7,338	24	.3
60-561300	Employment services	2,999	3,031	-32	-1.1
60-561320	Temporary help services	2,374	2,384	-10	-.4
60-561400	Business support services	823	816	7	.9
60-561700	Services to buildings and dwellings	1,711	1,674	37	2.2
60-562000	Waste management and remediation services	363	363	0	(1)
65-000000	Education and health services	20,377	20,379	-2	(1)
65-610000	Educational services	3,504	3,476	28	.8
65-620000	Health care and social assistance	16,873	16,903	-30	-.2
65-621000	Ambulatory health care services	6,244	6,275	-31	-.5
65-621100	Offices of physicians	2,369	2,406	-37	-1.6
65-621400	Outpatient care centers	640	650	-10	-1.6
65-621600	Home health care services	1,173	1,170	3	.3
65-622000	Hospitals	4,773	4,803	-30	-.6
65-623000	Nursing and residential care facilities	3,179	3,183	-4	-.1
65-623100	Nursing care facilities	1,664	1,660	4	.2
65-624000	Social assistance	2,677	2,644	33	1.2

CES Industry Code	CES Industry Title	Benchmark	Estimate	Differences	
				Amount	Percent
65-624400	Child day care services	873	856	17	1.9
70-000000	Leisure and hospitality	13,334	13,230	104	.8
70-710000	Arts, entertainment, and recreation	1,828	1,798	30	1.6
70-711000	Performing arts and spectator sports	388	388	0	(1)
70-712000	Museums, historical sites, and similar institutions	129	128	1	.8
70-713000	Amusements, gambling, and recreation	1,311	1,282	29	2.2
70-720000	Accommodation and food services	11,506	11,432	74	.6
70-721000	Accommodation	1,751	1,741	10	.6
70-722000	Food services and drinking places	9,755	9,691	64	.7
80-000000	Other services	5,394	5,335	59	1.1
80-811000	Repair and maintenance	1,184	1,156	28	2.4
80-812000	Personal and laundry services	1,299	1,287	12	.9
80-813000	Membership associations and organizations	2,911	2,891	20	.7
90-000000	Government	22,348	22,405	-57	-.3
90-910000	Federal	2,815	2,811	4	.1
90-911000	Federal, except U.S. Postal Service	2,201	2,198	3	.1
90-919120	U.S. Postal Service	614	614	0	(1)
90-920000	State government	5,199	5,212	-13	-.3
90-921611	State government education	2,532	2,563	-31	-1.2
90-922000	State government, excluding education	2,667	2,649	18	.7
90-930000	Local government	14,334	14,382	-48	-.3
90-931611	Local government education	8,165	8,231	-66	-.8
90-932000	Local government, excluding education	6,169	6,151	18	.3

(1) Less than 0.05 percent.

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Revisions in the post-benchmark period

Post-benchmark period estimates from April 2012 to December 2012 were calculated for each month based on new benchmark levels and new net birth/death factors. Net birth/death factors were revised to incorporate information from the most recent year of universe employment counts. [Table 3](#) shows the net birth/death model figures for the supersectors over the post-benchmark period. From April 2012 to December 2012, the cumulative net birth/death model added 755,000, compared with 721,000 in the previously published April to December estimates.

Table 3. Net birth/death estimates by industry supersector, April – December 2012 (in thousands)⁽¹⁾

CES Industry Code	CES Industry Title	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Cumulative Total
10-000000	Mining and logging	1	2	2	2	2	1	2	0	0	12
20-000000	Construction	28	37	23	3	8	5	1	-16	-22	67
30-000000	Manufacturing	-4	5	3	-5	4	0	0	0	-1	2
40-000000	Trade, transportation, and utilities	12	23	7	0	16	13	27	1	5	104
50-000000	Information	2	5	1	-1	3	-1	4	2	0	15
55-000000	Financial activities	3	7	2	-2	3	0	14	0	10	37
60-000000	Professional and business services	61	28	12	17	18	-7	60	-4	0	185
65-000000	Education and health services	22	15	-11	9	15	16	47	3	0	116
70-000000	Leisure and hospitality	72	76	79	45	18	-40	-40	-21	6	195
80-000000	Other services	9	7	4	-2	2	-1	3	-1	1	22
Monthly amount contributed		206	205	122	66	89	-14	118	-36	-1	755

⁽¹⁾Formerly Text Table A.

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[Table 4](#) presents revised Total nonfarm employment data on a seasonally adjusted basis for January through December 2012. The revised data for April 2012 forward incorporate the effect of applying the rate of change measured by the sample to the new benchmark level, as well as updated net birth/death model adjustments and new seasonal adjustment factors. Revisions to November and December also reflect incorporation of the annual CES sample update.

Table 4. Differences in seasonally adjusted levels and over-the-month changes, Total nonfarm employment, January - December 2012 (in thousands)⁽¹⁾

2012	Levels			Over-the-month changes		
	As previously published	As revised	Difference	As previously published	As revised	Difference
January	132,461	132,809	348	275	311	36
February	132,720	133,080	360	259	271	12
March	132,863	133,285	422	143	205	62
April	132,931	133,397	466	68	112	44
May	133,018	133,522	504	87	125	38
June	133,063	133,609	546	45	87	42
July	133,244	133,762	518	181	153	-28
August	133,436	133,927	491	192	165	-27
September	133,568	134,065	497	132	138	6
October	133,705	134,225	520	137	160	23
November	133,866	134,472	606	161	247	86
December ^(p)	134,021	134,668	647	155	196	41

⁽¹⁾Formerly Table 3.

^(p)Preliminary

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Changes to the CES published series

With the release of the January 2013 estimates, CES incorporated series changes related to annual sample adequacy review, reconstructed the history of a series, and began publishing previously available but not published seasonally adjusted series.

Series changes

All CES series are evaluated annually for sample size, coverage, and response rates. The following series changes result from a re-evaluation of the sample and universe coverage for NAICS industries.

Some series have new CES industry codes or titles as a result of the series changes ([Exhibit 1](#)). These CES industry code or title changes have been applied to all data types published for the designated series. Historical data for these series with new CES industry codes or CES industry titles will not be impacted; historical data will be available under the new CES industry codes or CES industry titles.

Exhibit 1. Series with CES industry code or title changes

NAICS Code	Previous		New	
	CES Industry Code	CES Industry Title	CES Industry Code	CES Industry Title
339	3133900000	Miscellaneous manufacturing	3133900000	Miscellaneous durable goods manufacturing
3399	3133990000	Other miscellaneous manufacturing	3133990000	Other miscellaneous durable goods manufacturing
33999	3133999000	All other miscellaneous manufacturing	3133999000	All other miscellaneous durable goods manufacturing
3121	3231210000	Beverages	3232910000	Beverages
31211	3231211000	Soft drinks and ice	3232911000	Soft drinks and ice
312111	3231211100	Soft drinks	3232911100	Soft drinks
31212,3,4	3231214000	Breweries, wineries, and distilleries	3232914000	Breweries, wineries, and distilleries
3122	3231220000	Tobacco and tobacco products	3232920000	Tobacco and tobacco products
316	3231600000	Leather and allied products	3232930000	Leather and allied products

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The remaining series changes exhibits ([Exhibit 2](#) through [Exhibit 7](#)) reference the new CES industry codes and titles, not the previous CES industry codes and titles, as noted in [Exhibit 1](#).

Only directly estimated data types¹ are included in the series changes exhibits: all employees (AE), AE average weekly hours (AE AWH), AE average hourly earnings (AE AHE), AE average weekly overtime hours (AE AWOH), production employees (PE), women employees (WE), PE average weekly hours (PE AWH), PE average hourly earnings (PE AHE), and PE average weekly overtime hours (PE AWOH). The directly estimated data types listed except for AE are collectively called non-AE data types. In order to more easily identify affected series, since AE series are published at a more detailed industry level than non-AE series, series changes exhibits are provided split by AE and non-AE data types. The non-AE tables cover all directly estimated non-AE data types.

The first group of series changes exhibits contains three exhibits referencing the AE data type and the second group contains three exhibits referencing all non-AE data types. The three exhibits in each group display the discontinued, collapsed, and new series. Discontinued series exhibits ([Exhibit 2](#) and [Exhibit 5](#)) display series for which the data types noted are no longer published. Collapsed series exhibits ([Exhibit 3](#) and [Exhibit 6](#)) display series for which the data types noted are no longer published because the industry no longer has sufficient sample to be estimated and published separately. Affected industries have been combined with other similar industries for estimation and publication purposes. Historical data for these series were reconstructed to provide consistent time series. New series exhibits ([Exhibit 4](#) and [Exhibit 7](#)) display series for which the data types noted are now published.

AE exhibits

Exhibit 2. Discontinued AE series

NAICS Code	CES Industry Code	CES Industry Title	Next Highest Published Industry
312	32-312000	Beverages and tobacco products	Miscellaneous nondurable goods manufacturing (32-329000)

Exhibit 3. Collapsed AE series

NAICS Code	CES Industry Code	CES Industry Title	Collapsed into CES Industry
221111	44-221111	Hydroelectric power generation	Collapsed into Nuclear and other electric power generation (44-221118)
3366*	90-913366	Federal ship building and repairing	Collapsed into Other Federal government (90-919999)

*Contains only federally-owned portion of NAICS code.

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¹ CES estimates data in two ways: directly and indirectly. Directly estimated data types refer to data types for which estimates are calculated directly from the responding sample. Indirectly estimated data types refer to data types for which estimates are calculated from other directly estimated data types. Average weekly earnings of all employees and indexes of aggregate weekly hours of all employees are examples of indirectly estimated data types. For more information on indirectly estimated data types, see the [CES Technical Notes](#).

Exhibit 4. New AE series

NAICS Code	CES Industry Code	CES Industry Title
312,6	32-329000	Miscellaneous nondurable goods manufacturing

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Non-AE exhibits

The data types within the non-AE classification that are impacted by the series change are noted in each of the tables.

Exhibit 5. Discontinued Non-AE series

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry*
21232	10-212320	Sand, gravel, clay, and refractory mining	AE AWH, AE AHE, PE, PE AWH, PE AHE	Nonmetallic mineral mining and quarrying (10-212300) for data types AE AWH, AE AHE; Mining, except oil and gas (10-212000) for data types PE, PE AWH, PE AHE
212321	10-212321	Construction sand and gravel mining	AE AWH, AE AHE, PE, PE AWH, PE AHE	Nonmetallic mineral mining and quarrying (10-212300) for data types AE AWH, AE AHE; Mining, except oil and gas (10-212000) for data types PE, PE AWH, PE AHE
21239	10-212390	Other nonmetallic mineral mining	AE AWH, AE AHE	Nonmetallic mineral mining and quarrying (10-212300)
236116	20-236116	New multifamily general contractors	PE, PE AWH, PE AHE	Residential building (20-236100)
236117	20-236117	New housing operative builders	PE, PE AWH, PE AHE	Residential building (20-236100)
321211,2	31-321212	Hardwood and softwood veneer and plywood	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE	Plywood and engineered wood products (31-321200)

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry*
321213,4,9	31-321214	All other plywood and engineered wood products	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE	Plywood and engineered wood products (31-321200)
3271	31-327100	Clay products and refractories	PE, PE AWH, PE AHE, PE AWOH	Nonmetallic mineral products (31-327000)
3274,9	31-327900	Lime, gypsum, and other nonmetallic mineral products	PE, PE AWH, PE AHE, PE AWOH	Nonmetallic mineral products (31-327000)
3311	31-331100	Iron and steel mills and ferroalloy production	AE AWH, AE AHE, AE AWOH	Primary metals (31-331000)
3313	31-331300	Alumina and aluminum production	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH	Primary metals (31-331000)
33151	31-331510	Ferrous metal foundries	PE AWOH	Foundries (31-331500)
33152	31-331520	Nonferrous metal foundries	PE AWOH	Foundries (31-331500)
3322	31-332200	Cutlery and hand tools	AE AWOH, PE, PE AWH, PE AHE, PE AWOH	Fabricated metal products (31-332000)
332321	31-332321	Metal windows and doors	PE, PE AWH, PE AHE, PE AWOH	Ornamental and architectural metal products (31-332320)
332323	31-332323	Ornamental and architectural metal work	PE, PE AWH, PE AHE, PE AWOH	Ornamental and architectural metal products (31-332320)
3325	31-332500	Hardware	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH	Fabricated metal products (31-332000)
3326	31-332600	Spring and wire products	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH	Fabricated metal products (31-332000)
332721	31-332721	Precision turned products	AE AWH, AE AHE, AE AWOH	Turned products and screws, nuts, and bolts (31-332720)

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry*
332722	31-332722	Bolts, nuts, screws, rivets, and washers	AE AWH, AE AHE, AE AWOH	Turned products and screws, nuts, and bolts (31-332720)
333511	31-333511	Industrial molds	PE, PE AWH, PE AHE, PE AWOH	Metalworking machinery (31-333500)
333515,9	31-333519	Miscellaneous metalworking machinery	PE, PE AWH, PE AHE, PE AWOH	Metalworking machinery (31-333500)
33391	31-333910	Pumps and compressors	AE AWOH	Other general purpose machinery (31-333900)
33399	31-333990	All other general purpose machinery	AE AWOH	Other general purpose machinery (31-333900)
3341	31-334100	Computer and peripheral equipment	AE AWOH, PE, PE AWH, PE AHE, PE AWOH	Computer and electronic products (31-334000)
3342	31-334200	Communications equipment	PE AWOH	Computer and electronic products (31-334000)
33422	31-334220	Broadcast and wireless communications equipment	AE AWOH, PE, PE AWH, PE AHE, PE AWOH	Communications equipment (31-334200) for data types AE AWOH, PE, PE AWH, PE AHE; Computer and electronic products (31-334000) for data type PE AWOH
3343	31-334300	Audio and video equipment	AE AWH, AE AHE, WE	Computer and electronic products (31-334000)
334513	31-334513	Industrial process variable instruments	AE AWOH, PE, PE AWH, PE AHE, PE AWOH	Electronic instruments (31-334500)
334515	31-334515	Electricity and signal testing instruments	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Electronic instruments (31-334500)
3346	31-334600	Magnetic media manufacturing and reproduction	AE AWH, AE AHE, WE	Computer and electronic products (31-334000)
336211	31-336211	Motor vehicle bodies	PE, PE AWH, PE AHE, PE AWOH	Motor vehicle bodies and trailers (31-336200)
33631	31-336310	Motor vehicle gasoline engine and parts	AE AWOH	Motor vehicle parts (31-336300)

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry*
33632	31-336320	Motor vehicle electric equipment	PE, PE AWH, PE AHE, PE AWOH	Motor vehicle parts (31-336300)
3366	31-336600	Ship and boat building	AE AWH, AE AHE, AE AWOH	Transportation equipment (31-336000)
3365,9	31-336900	Railroad rolling stock and other transportation equipment	AE AWH, AE AHE, AE AWOH	Transportation equipment (31-336000)
337121	31-337121	Upholstered household furniture	PE AWOH	Other household and institutional furniture (31-337120)
337124,5,7	31-337127	Miscellaneous household and institutional furniture	PE AWOH	Other household and institutional furniture (31-337120)
3372	31-337200	Office furniture and fixtures	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH	Furniture and related products (31-337000)
337215	31-337215	Showcases, partitions, shelving, and lockers	PE AWOH	Furniture and related products (31-337000)
3379	31-337900	Other furniture-related products	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH	Furniture and related products (31-337000)
3112	32-311200	Grain and oilseed milling	PE, PE AWH, PE AHE, PE AWOH	Food manufacturing (32-311000)
311411	32-311411	Frozen fruits and vegetables	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE	Frozen food (32-311410)
311412	32-311412	Frozen specialty food	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE	Frozen food (32-311410)
311611	32-311611	Animal, except poultry, slaughtering	PE, PE AWH, PE AHE, PE AWOH	Animal slaughtering and processing (32-311600)

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry*
311612,3	32-311613	Meat processed from carcasses, and rendering and meat byproduct processing	PE, PE AWH, PE AHE, PE AWOH	Animal slaughtering and processing (32-311600)
31181	32-311810	Bread and bakery products	AE AWOH, PE, PE AWH, PE AHE, PE AWOH	Bakeries and tortilla manufacturing (32-311800)
311811	32-311811	Retail bakeries	PE, PE AWH, PE AHE	Bakeries and tortilla manufacturing (32-311800)
311812,3	32-311813	Commercial bakeries and frozen cakes and other pastry products	PE, PE AWH, PE AHE	Bakeries and tortilla manufacturing (32-311800)
31182,3	32-311830	Cookies, crackers, pasta, and tortillas	AE AWOH, PE, PE AWH, PE AHE, PE AWOH	Bakeries and tortilla manufacturing (32-311800)
3119	32-311900	Other food products	PE, PE AWH, PE AHE, PE AWOH	Food manufacturing (32-311000)
312	32-312000	Beverages and tobacco products	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Miscellaneous nondurable goods manufacturing (32-329000)
3131	32-313100	Fiber, yarn, and thread mills	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE	Textile mills (32-313000)
3132	32-313200	Fabric mills	PE, PE AWH, PE AHE, PE AWOH	Textile mills (32-313000)
31321	32-313210	Broadwoven fabric mills	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Fabric mills (32-313200) for data types AE AWH, AE AHE, WE; Textile mills (32-313000) for data types PE, PE AWH, PE AHE
3133	32-313300	Textile and fabric finishing mills	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE	Textile mills (32-313000)

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry*
3141	32-314100	Textile furnishings mills	PE AWOH	Textile product mills (32-314000)
3149	32-314900	Other textile product mills	PE AWOH	Textile product mills (32-314000)
31491	32-314910	Textile bag and canvas mills	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE	Other textile product mills (32-314900) for data types AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, WE; Textile product mills (32-314000) for data type PE AWOH
31499	32-314990	All other textile product mills	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE	Other textile product mills (32-314900) for data types AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, WE; Textile product mills (32-314000) for data type PE AWOH
3152	32-315200	Cut and sew apparel	AE AWOH	Apparel (32-315000)
3151,9	32-315900	All other apparel manufacturing	AE AWOH	Apparel (32-315000)
323110	32-323110	Printing	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE	Printing and related support activities (32-323000)
323113	32-323113	Commercial screen printing	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE	Printing and related support activities (32-323000)
323111,7	32-323117	Commercial printing, except screen	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE	Printing and related support activities (32-323000)

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry*
32312	32-323120	Support activities for printing	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE	Printing and related support activities (32-323000)
32411	32-324110	Petroleum refineries	AE AWH, AE AHE, AE AWOH	Petroleum and coal products (32-324000)
32412,9	32-324190	Asphalt paving and roofing materials and other petroleum and coal products	AE AWH, AE AHE, AE AWOH	Petroleum and coal products (32-324000)
325211	32-325211	Plastics material and resin	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE	Resin, rubber, and artificial fibers (32-325200)
3253	32-325300	Agricultural chemicals	AE AWH, AE AHE, AE AWOH, WE	Chemicals (32-325000)
3255	32-325500	Paints, coatings, and adhesives	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE	Chemicals (32-325000)
326113	32-326113	Nonpackaging plastics film and sheet	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE	Plastics packaging materials, film, and sheet (32-326110)
32612	32-326120	Plastics pipe, fittings, and profile shapes	PE, PE AWH, PE AHE, PE AWOH	Plastics products (32-326100)
32613,6	32-326160	Plastics bottles and laminated plastics plate, sheet, and shapes	PE, PE AWH, PE AHE, PE AWOH	Plastics products (32-326100)
31212,3,4	32-329140	Breweries, wineries, and distilleries	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE	Miscellaneous nondurable goods manufacturing (32-329000)

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry*
316	32-329300	Leather and allied products	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Miscellaneous nondurable goods manufacturing (32-329000)
42385	41-423850	Service establishment equipment	PE, PE AWH, PE AHE	Machinery and supplies (41-423800)
42386	41-423860	Other transportation goods	PE, PE AWH, PE AHE	Machinery and supplies (41-423800)
42411,2	41-424120	Printing and writing paper and office supplies	PE, PE AWH, PE AHE	Paper and paper products (41-424100)
42413	41-424130	Industrial paper	PE, PE AWH, PE AHE	Paper and paper products (41-424100)
42451	41-424510	Grains and field beans	PE, PE AWH, PE AHE	Farm product raw materials (41-424500)
44121	42-441210	Recreational vehicle dealers	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Other motor vehicle dealers (42-441200)
44122	42-441220	Motorcycle, boat, and other vehicle dealers	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Other motor vehicle dealers (42-441200)
44421	42-444210	Outdoor power equipment stores	PE, PE AWH, PE AHE	Lawn and garden equipment and supplies stores (42-444200)
44422	42-444220	Nursery, garden, and farm supply stores	PE, PE AWH, PE AHE	Lawn and garden equipment and supplies stores (42-444200)
45431	42-454310	Fuel dealers	PE, PE AWH, PE AHE	Direct selling establishments (42-454300)
45439	42-454390	Other direct selling establishments	PE, PE AWH, PE AHE	Direct selling establishments (42-454300)
483	43-483000	Water transportation	AE AWH, AE AHE, PE, PE AWH, PE AHE	Transportation and warehousing (43-000000)
487	43-487000	Scenic and sightseeing transportation	AE AWH, AE AHE	Transportation and warehousing (43-000000)

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry*
48841	43-488410	Motor vehicle towing	PE, PE AWH, PE AHE	Support activities for road transportation (43-488400)
49312	43-493120	Refrigerated warehousing and storage	PE, PE AWH, PE AHE	Warehousing and storage (43-493000)
49313,9	43-493190	Miscellaneous warehousing and storage	PE, PE AWH, PE AHE	Warehousing and storage (43-493000)
51113	50-511130	Book publishers	PE, PE AWH, PE AHE	Newspaper, book, and directory publishers (50-511100)
52231	55-522310	Mortgage and nonmortgage loan brokers	PE, PE AWH, PE AHE	Activities related to credit intermediation (55-522300)
52239	55-522390	Other credit intermediation activities	PE, PE AWH, PE AHE	Activities related to credit intermediation (55-522300)
524113	55-524113	Direct life insurance carriers	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Direct life and health insurance carriers (55-524110)
524114	55-524114	Direct health and medical insurance carriers	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Direct life and health insurance carriers (55-524110)
524126	55-524126	Direct property and casualty insurers	PE, PE AWH, PE AHE	Direct insurers, except life and health (55-524120)
524127,8	55-524128	Direct title insurance and other direct insurance carriers	PE, PE AWH, PE AHE	Direct insurers, except life and health (55-524120)
524291	55-524291	Claims adjusting	PE, PE AWH, PE AHE	Other insurance-related activities (55-524290)
524298	55-524298	All other insurance-related activities	PE, PE AWH, PE AHE	Other insurance-related activities (55-524290)
53113	55-531130	Miniwarehouse and self-storage unit operators	PE, PE AWH, PE AHE	Lessors of real estate (55-531100)
53119	55-531190	Lessors of other real estate property	PE, PE AWH, PE AHE	Lessors of real estate (55-531100)

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry*
53132	55-531320	Offices of real estate appraisers	PE, PE AWH, PE AHE	Activities related to real estate (55-531300)
53139	55-531390	Other activities related to real estate	PE, PE AWH, PE AHE	Activities related to real estate (55-531300)
5321	55-532100	Automotive equipment rental and leasing	PE, PE AWH, PE AHE	Rental and leasing services (55-532000)
5322	55-532200	Consumer goods rental	PE, PE AWH, PE AHE	Rental and leasing services (55-532000)
53223	55-532230	Video tape and disc rental	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Consumer goods rental (55-532200) for data types AE AWH, AE AHE, WE; Rental and leasing services (55-532000) for data types PE, PE AWH, PE AHE
53221,2,9	55-532290	Miscellaneous consumer goods rental	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Consumer goods rental (55-532200) for data types AE AWH, AE AHE, WE; Rental and leasing services (55-532000) for data types PE, PE AWH, PE AHE
541213	60-541213	Tax preparation services	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Accounting and bookkeeping services (60-541200)
541219	60-541219	Other accounting services	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Accounting and bookkeeping services (60-541200)
541612	60-541612	Human resource consulting services	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Management consulting services (60-541610)
541618	60-541618	Other management consulting services	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Management consulting services (60-541610)
54162	60-541620	Environmental consulting services	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Management and technical consulting services (60-541600)

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry*
54169	60-541690	Other technical consulting services	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Management and technical consulting services (60-541600)
56291	60-562910	Remediation services	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Remediation and other waste services (60-562900)
56292,9	60-562990	Materials recovery facilities and other waste management services	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Remediation and other waste services (60-562900)
6222	65-622200	Psychiatric and substance abuse hospitals	PE, PE AWH, PE AHE	Hospitals (65-622000)
6223	65-622300	Other hospitals	PE, PE AWH, PE AHE	Hospitals (65-622000)
62421	65-624210	Community food services	PE, PE AWH, PE AHE	Emergency and other relief services (65-624200)
62422,3	65-624230	Community housing, emergency, and relief services	PE, PE AWH, PE AHE	Emergency and other relief services (65-624200)
721211	70-721211	RV parks and campgrounds	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	RV parks and recreational camps (70-721200)
721214	70-721214	Recreational and vacation camps	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	RV parks and recreational camps (70-721200)
812111,2	80-812112	Barber shops and beauty salons	PE, PE AWH, PE AHE	Hair, nail, and skin care services (80-812110)
812113	80-812113	Nail salons	PE, PE AWH, PE AHE	Hair, nail, and skin care services (80-812110)
81221	80-812210	Funeral homes and funeral services	PE, PE AWH, PE AHE	Death care services (80-812200)
81222	80-812220	Cemeteries and crematories	PE, PE AWH, PE AHE	Death care services (80-812200)

*Unless otherwise noted in the Next Highest Published Industry column, the industry listed is the next highest published industry for all data types discontinued from publication.

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Exhibit 6. Collapsed Non-AE series

NAICS Code	CES Industry Code	CES Industry Title	Collapsed into CES Industry	Data Types Collapsed
3366*	90-913366	Federal ship building and repairing	Collapsed into Other Federal government (90-919999)	WE

*Contains only federally-owned portion of NAICS code.

Exhibit 7. New Non-AE series

NAICS Code	CES Industry Code	CES Industry Title	Data Types Published
312,6	32-329000	Miscellaneous nondurable goods manufacturing	AE AWH, AE AHE, AE AWOH, PE, PE AWH, PE AHE, PE AWOH, WE

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Reconstructed data

In order to provide a continuous and comparable employment time series, CES decided to reconstruct the history for one CES series, 55-524126 Direct property and casualty insurers, impacted by the changes to noncovered employment incorporated with the 2011 benchmark (see www.bls.gov/ces/cesbmart11.pdf). CES determined that the history of this series did not capture a significant amount of noncovered employment and instead showed a level shift in the series from April 2010 to March 2011, where the noncovered employment, calculated from County Business Patterns (CBP) data, was first included. CES uses CBP data to calculate the majority of noncovered employment. The CBP – which draws from Social Security filings and other records which do include those employees not covered by UI tax laws – is lagged in its publication by approximately two years (e.g. in 2012 the 2010 CBP data was published). For more information about calculating noncovered employment, see www.bls.gov/ces/cestn.htm#NCE.

CBP data was used to reconstruct AE data for CES series 55-524126 back to 1991 in order to incorporate the noncovered employment in the history. From the reconstructed AE data, the remaining published data types were produced using the previously published sample ratios.

This reconstruction also resulted in revisions back to 1991 for the associated aggregate series, including but not limited to Total nonfarm, in the associated data types.

Seasonally adjusted data publication change

CES began publishing more seasonally adjusted data with the release of January 2013 estimates on February 1, 2013. These data were previously available only by request, but are now available on the public website at www.bls.gov/ces/data.htm. This change in publication status does not impact the seasonally adjusted series published for a given month with the first

preliminary release of CES data². The newly published seasonally adjusted series will be released with the second preliminary estimates for a given month. Approximately 770 more seasonally adjusted AE series and approximately 4,060 more seasonally adjusted non-AE and derivative series will be published³.

Seasonally adjusted data for detail series corresponding to CES series 31-336000 Transportation equipment have been updated to reflect strike data from 1998 and were revised back to 1990. These detail series had previously been available upon request, but not published. Seasonally adjusted data for CES series 31-336000 Transportation equipment has also been revised back to 1990. All associated aggregate series, including but not limited to Total nonfarm, and associated data types have also been revised.

Specification files and related information necessary for duplicating the seasonal adjustment process has been updated and, for these newly published series, added to the existing documentation available at www.bls.gov/web/empsit/cesseasadj.htm.

Data clarification

CES currently publishes data for both AE and PE aggregate weekly hours, aggregate weekly payrolls, and in manufacturing industries, aggregate weekly overtime hours. These data are produced using two separate sets of sample data. Data are used in the calculation for the AE aggregate hours and earnings series if the establishment has reported both hours and payroll information for all employees for the given month. Data are used in the calculation for the PE aggregate hours and earnings series if the establishment has reported both hours and payroll information for production and nonsupervisory employees for the given month. Since not all establishments report hours and payroll data for both all employees and production and nonsupervisory employees, the data used in the two calculations can vary.

Given that the aggregate hours and earnings series may be calculated from two separate sets of sample data, it is possible for the aggregate hours and earnings series for production and nonsupervisory employees to be greater than that of all employees even though by definition this is impossible. The possibility arises because each of the samples is subject to its own nonsampling error. When this occurs, CES does not cap the production and nonsupervisory employees aggregate hours and earnings data to fit the definitional restriction to be less than the all employees aggregate data because each of the estimates separately is supported by their respective samples.

CES will be conducting research to examine potential solutions to this issue.

² Publication status for first preliminary seasonally adjusted series may also be impacted by the CES series changes noted in [Exhibit 1](#) through [Exhibit 7](#) above.

³ Counts of additional series are approximate due to how some of the CES industry code changes, noted in [Exhibit 1](#), impact the additional seasonally adjusted published series.

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 UI 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 ensures 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 0.3 percent (in absolute terms), with an absolute range of 0.1 percent to 0.7 percent.

Benchmark revision effects for other data types

The routine benchmarking process results in revisions to the series for production and nonsupervisory employees and women employees. There are no benchmark employment levels for these series; they are revised by preserving ratios of employment for the particular data type to all employee 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, average hourly earnings, and in manufacturing industries, average weekly overtime hours 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 all employee employment estimates or the production and nonsupervisory employee employment estimates for the basic cells are used as weights for their respective hours and earnings estimates for broader industry groupings. Adjustments of the all employee estimates to new benchmarks may alter the weights used for both AE and PE hours and earnings, which, in turn, may change the estimates for both AE and PE hours and earnings at higher levels of aggregation.

Generally, new employment benchmarks have little effect on hours and earnings estimates for major industry groupings. To influence the hours and earnings estimates of a broader industry 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 broader group. [Table 5](#) and [Table 6](#) provide information on the levels of specific hours and earnings series resulting from the March 2012 benchmark. At the Total private level, there was no change in average weekly hours estimates for both AE and PE from the previously published level. Total private average hourly earnings increased by 1 cent for AE and 2 cents for PE from the previously published level.

Table 5. Effect of March 2012 benchmark revisions to AE AWH and AE AHE estimates, selected industries⁽¹⁾

CES Industry Code	CES Industry Title	Average Weekly Hours			Average Hourly Earnings		
		As Previously Published	As Revised	Difference	As Previously Published	As Revised	Difference
05-000000	Total private	34.3	34.3	0.0	\$23.41	\$23.42	\$0.01
06-000000	Goods-producing	40.0	40.0	.0	24.69	24.67	-.02
08-000000	Private service-providing	33.1	33.1	.0	23.11	23.13	.02
10-000000	Mining and logging	43.5	43.5	.0	29.06	28.98	-.08
20-000000	Construction	38.1	38.2	.1	25.72	25.72	.00
30-000000	Manufacturing	40.6	40.6	.0	23.94	23.91	-.03
31-000000	Durable goods	41.0	41.0	.0	25.32	25.28	-.04
31-321000	Wood products	39.6	39.5	-.1	17.33	17.34	.01
31-327000	Nonmetallic mineral products	41.0	41.0	.0	20.92	20.92	.00
31-331000	Primary metals	43.7	43.7	.0	23.46	23.37	-.09
31-332000	Fabricated metal products	40.9	40.9	.0	21.29	21.28	-.01
31-333000	Machinery	41.6	41.6	.0	25.45	25.47	.02
31-334000	Computer and electronic products	39.7	39.7	.0	33.52	33.52	.00
31-335000	Electrical equipment and appliances	40.8	40.8	.0	23.68	23.68	.00
31-336000	Transportation equipment	42.9	42.9	.0	28.82	28.73	-.09
31-336001	Motor vehicles and parts	42.9	42.9	.0	23.94	23.81	-.13
31-337000	Furniture and related products	39.5	39.5	.0	18.67	18.67	.00
31-339000	Miscellaneous durable goods manufacturing	38.3	38.3	.0	23.58	23.56	-.02

CES Industry Code	CES Industry Title	Average Weekly Hours			Average Hourly Earnings		
		As Previously Published	As Revised	Difference	As Previously Published	As Revised	Difference
32-000000	Nondurable goods	39.9	39.9	.0	21.56	21.54	-.02
32-311000	Food manufacturing	39.2	39.3	.1	17.88	17.89	.01
32-313000	Textile mills	40.5	40.5	.0	17.22	17.22	.00
32-314000	Textile product mills	39.1	39.1	.0	16.22	16.24	.02
32-315000	Apparel	37.1	37.1	.0	17.71	17.73	.02
32-322000	Paper and paper products	41.4	41.5	.1	23.97	24.02	.05
32-323000	Printing and related support activities	37.2	37.2	.0	21.41	21.41	.00
32-324000	Petroleum and coal products	45.1	45.1	.0	34.44	34.58	.14
32-325000	Chemicals	41.8	41.8	.0	27.76	27.76	.00
32-326000	Plastics and rubber products	40.8	40.8	.0	20.05	20.05	.00
32-329000	Miscellaneous nondurable goods manufacturing	36.0	36.0	.0	22.12	22.12	.00
40-000000	Trade, transportation, and utilities	34.4	34.4	.0	20.28	20.29	.01
41-420000	Wholesale trade	38.4	38.4	.0	26.48	26.50	.02
42-000000	Retail trade	31.5	31.5	.0	16.11	16.11	.00
43-000000	Transportation and warehousing	37.9	38.0	.1	21.92	21.95	.03
44-220000	Utilities	41.1	41.1	.0	33.80	33.81	.01
50-000000	Information	36.3	36.3	.0	31.59	31.61	.02
55-000000	Financial activities	37.0	37.0	.0	28.78	28.84	.06
60-000000	Professional and business services	35.6	35.6	.0	28.03	28.03	.00

CES Industry Code	CES Industry Title	Average Weekly Hours			Average Hourly Earnings		
		As Previously Published	As Revised	Difference	As Previously Published	As Revised	Difference
65-000000	Education and health services	32.7	32.7	.0	24.13	24.16	.03
70-000000	Leisure and hospitality	26.0	26.0	.0	13.39	13.40	.01
80-000000	Other services	31.4	31.5	.1	20.67	20.82	.15

⁽¹⁾Formerly Table 4a.

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Table 6. Effect of March 2012 benchmark revisions to PE AWH and PE AHE estimates, selected industries⁽¹⁾

CES Industry Code	CES Industry Title	Average Weekly Hours			Average Hourly Earnings		
		As Previously Published	As Revised	Difference	As Previously Published	As Revised	Difference
05-000000	Total private	33.5	33.5	0.0	\$19.67	\$19.69	\$0.02
06-000000	Goods-producing	40.9	40.9	.0	20.80	20.81	.01
08-000000	Private service-providing	32.3	32.3	.0	19.44	19.45	.01
10-000000	Mining and logging	46.7	46.8	.1	26.05	26.02	-.03
20-000000	Construction	38.8	38.8	.0	23.82	23.82	.00
30-000000	Manufacturing	41.5	41.5	.0	19.04	19.02	-.02
31-000000	Durable goods	42.0	42.0	.0	20.14	20.12	-.02
31-321000	Wood products	40.6	40.6	.0	14.82	14.82	.00
31-327000	Nonmetallic mineral products	41.5	41.5	.0	17.89	17.88	-.01
31-331000	Primary metals	44.2	44.1	-.1	20.12	20.06	-.06
31-332000	Fabricated metal products	42.2	42.2	.0	18.17	18.17	.00
31-333000	Machinery	43.2	43.2	.0	19.95	19.96	.01
31-334000	Computer and electronic products	40.4	40.4	.0	23.40	23.40	.00

CES Industry Code	CES Industry Title	Average Weekly Hours			Average Hourly Earnings		
		As Previously Published	As Revised	Difference	As Previously Published	As Revised	Difference
31-335000	Electrical equipment and appliances	41.4	41.4	.0	17.94	17.94	.00
31-336000	Transportation equipment	43.6	43.6	.0	24.83	24.77	-.06
31-336001	Motor vehicles and parts	44.0	44.0	.0	21.49	21.39	-.10
31-337000	Furniture and related products	40.2	40.2	.0	15.32	15.32	.00
31-339000	Miscellaneous durable goods manufacturing	38.8	38.8	.0	16.98	16.97	-.01
32-000000	Nondurable goods	40.7	40.7	.0	17.24	17.22	-.02
32-311000	Food manufacturing	40.0	40.0	.0	14.87	14.87	.00
32-313000	Textile mills	43.2	43.2	.0	13.43	13.43	.00
32-314000	Textile product mills	40.4	40.3	-.1	12.50	12.51	.01
32-315000	Apparel	37.2	37.2	.0	12.67	12.66	-.01
32-322000	Paper and paper products	42.5	42.5	.0	20.30	20.37	.07
32-323000	Printing and related support activities	38.1	38.1	.0	17.28	17.28	.00
32-324000	Petroleum and coal products	46.6	46.6	.0	31.30	31.44	.14
32-325000	Chemicals	42.1	42.1	.0	21.55	21.55	.00
32-326000	Plastics and rubber products	41.7	41.7	.0	16.02	16.03	.01
32-329000	Miscellaneous nondurable goods manufacturing	38.4	38.4	.0	18.27	18.27	.00
40-000000	Trade, transportation, and utilities	33.5	33.5	.0	17.34	17.35	.01
41-420000	Wholesale trade	38.3	38.3	.0	21.98	21.99	.01
42-000000	Retail trade	30.4	30.4	.0	13.80	13.80	.00

CES Industry Code	CES Industry Title	Average Weekly Hours			Average Hourly Earnings		
		As Previously Published	As Revised	Difference	As Previously Published	As Revised	Difference
43-000000	Transportation and warehousing	37.2	37.3	.1	19.54	19.56	.02
44-220000	Utilities	40.2	40.2	.0	31.16	31.17	.01
50-000000	Information	35.7	35.7	.0	26.72	26.74	.02
55-000000	Financial activities	36.3	36.3	.0	22.48	22.53	.05
60-000000	Professional and business services	34.9	34.9	.0	23.26	23.25	-.01
65-000000	Education and health services	32.2	32.2	.0	20.98	21.01	.03
70-000000	Leisure and hospitality	24.9	24.9	.0	11.62	11.63	.01
80-000000	Other services	30.5	30.6	.1	17.45	17.60	.15

⁽¹⁾Formerly Table 4b.

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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 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 ten 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 nine months 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 nine months following the March benchmark (also referred to as the post-benchmark period, see Revisions in the post-benchmark period). New net birth/death model estimates also are calculated and applied during post-benchmark estimation. The annual sample update is introduced in the November final sample-based estimates, which are released along with the January first preliminary sample-based estimates that coincide with the Benchmark release. The new sample is used for all subsequent estimates.

Benchmark source material

The principal source of benchmark data for private industries is the Quarterly Census of Employment and Wages (QCEW). Noncovered employment results from a difference in scope between the CES program and the QCEW program. The QCEW only includes employment data provided to State Employment Security Agencies by employers covered by State UI laws. BLS uses several other sources to establish benchmarks for the 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 Non-office insurance sales workers, child daycare workers, Religious organizations, and Private schools and hospitals. Noncovered employment for State and Local government hospitals and Educational institutions is based on the Annual Survey of Public Employment and Payroll (ASPEP) conducted by the Census Bureau. Noncovered employment

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. More information on calculating noncovered employment in the CES program is available in the CES Technical Notes at www.bls.gov/ces/cestn.htm#NCE.

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 nine months out of date. The CES survey thus cannot 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 excludes employment losses from business deaths from sample-based estimation in order to offset the missing employment gains from 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 Autoregressive Integrated Moving Average (ARIMA) time series model designed to estimate the 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 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 exhibit a seasonal pattern similar to the seasonal patterns of the continuing businesses.

Only error from the second component is directly measurable. Error from this component is measured by comparing the actual net of births and deaths from March 2011-12 — once it becomes available — with the model-based estimate. As [Table 7](#) shows, the actual net birth/death for April 2011 to March 2012 was approximately 426,000 above the forecasted amount used in the CES monthly estimates for the time period.

Table 7. Differences between forecasted and actual net birth/death, Total private employment, April 2011 – March 2012 (in thousands)⁽¹⁾

Benchmark 2012	2011						2012			Total			
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		Jan	Feb	Mar
Actual Net Birth/Death	272	204	116	157	93	27	122	-23	3	-284	115	115	917
Forecast Net Birth/Death	172	211	141	5	89	-26	116	-30	-1	-367	91	90	491
Difference	100	-7	-25	152	4	53	6	7	4	83	24	25	426
Cumulative Difference	100	93	68	220	224	277	283	290	294	377	401	426	

⁽¹⁾Formerly Exhibit 6.

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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 not seasonally adjusted and seasonally adjusted data. The data can be accessed at www.bls.gov/ces/, the CES homepage.

Small domain model

The CES Small Domain Model (SDM) is used for industries where the sample alone is insufficient for reliable estimates. The CES SDM is a Weighted Least Squares model with two employment inputs: (1) an estimate based on available CES sample for that series, and (2) an ARIMA projection based on 10 years of historical QCEW data. Further background on the SDM is provided in the CES technical notes at www.bls.gov/ces/cestn.htm#section5b.

There are six industries estimated using the SDM. These industries are Lessors of nonfinancial intangible assets, Direct health and medical insurance carriers, Tax preparation services, Other technical consulting services, Remediation services, and Recreational and vacation camps.

Estimates for all other data types for these six series previously used the standard weighted link-and-taper methodology, which does not account for insufficient sample. Since item response rates tend to be lower for data types other than AE, BLS discontinued production of all non-AE series where the SDM was used for AE with the 2012 benchmark release in February 2013.

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 ([Table 8](#) through [Table 16](#)).

For published AE series, the CES program seasonally adjusts many series at the 3-, 4-, 5-, and 6-digit NAICS level. However, only the seasonally adjusted 3-digit NAICS level estimates are used to aggregate to the higher levels. The seasonally adjusted series that are published at more detailed levels than the 3-digit NAICS are considered to be independent series and are not included in aggregation of seasonally adjusted series⁴ with the exception of the component series used in indirect seasonal adjustment⁵.

For published AE AWH, AE AHE, PE, PE AWH, and PE AHE series, the CES program seasonally adjusts at the 2 digit NAICS level, or the major industry sector level for all industries except Manufacturing which is seasonally adjusted at the 3-digit NAICS level. These seasonally adjusted series are aggregated from the 3-digit NAICS level in Manufacturing industries and from the major industry sector level for all other industries to get higher level seasonally adjusted series.

For published PE and AE overtime series, the CES program seasonally adjusts major industry sectors Durable goods and Nondurable goods. These two seasonally adjusted overtime series are aggregated to the Manufacturing level.

For published WE series, the CES program seasonally adjusts at the major industry sector level for all industries. The seasonally adjusted WE are aggregated from the major industry sector level for all industries to the higher level seasonally adjusted 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

⁴ For example, seasonally adjusted data at the 5-digit NAICS are not aggregated to form seasonally adjusted 4-digit NAICS series. Instead the 4-digit NAICS and the 5-digit NAICS level series are independently seasonally adjusted.

⁵ Most series are seasonally adjusted by directly applying the seasonal adjustment factors to the series. In some cases, 3-digit NAICS series are indirectly seasonally adjusted by aggregating the seasonally adjusted employment level of their component series. For indirectly seasonally adjusted 3-digit NAICS series, the seasonal adjustment factors are applied to the component series rather than to the 3-digit NAICS series. Indirectly seasonally adjusted series are noted in [Table 8](#).

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 four and sometimes five 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 three 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 three years. All else the same, the greatest potential for distortion occurred when the current month being estimated had a 5-week interval but the three years preceding it were all 4-week intervals, or conversely when the current month had a 4-week interval but the three 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 auto-correlation, 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 eleven separate survey interval variables, one specified for each month, except March. March is excluded because there are almost always four weeks between the February and March surveys. Models for individual basic series are fit with the most recent ten years of data available, the standard time span used for CES seasonal adjustment.

The REGARIMA procedure yields regression coefficients for each of the eleven 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 eleven 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 eleven 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 the 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 Local government, excluding educational services.

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 hours (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 Utilities. For AHE, the length-of-pay-period variable is significant for Wholesale trade, Retail trade, Information, Financial activities, Professional and business services, and Other services. All AWH series in the service-providing industries except Utilities have been adjusted from January 1990 forward. The AHE series for Wholesale trade, Retail trade, Information, 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.

Special notice regarding seasonal adjustment for AE hours and earnings

Concurrent with the release of January 2010 data, the CES program began publishing AE hours and earnings as official BLS series. The AE hours and earnings series are published at the same level of industry detail as PE hours and earnings series and are published on both a not seasonally adjusted and a seasonally adjusted basis.

CES has at least five full years of history for the AE hours and earnings series, which allows for incorporating the special model adjustments for variation due to the calendar effects (4- vs. 5-week and 10- vs. 11-day). Also, generally CES uses 10 years of not seasonally adjusted data as an input to seasonal adjustment. This year, CES will replace the entire 82 months of seasonally adjusted AE hours and earnings data, ensuring all data is adjusted using the same methodology.

Seasonal adjustment model specifications

Table 8. Model specifications for seasonal adjustment of AE series⁽¹⁾

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	Other Adj ⁽²⁾
10-113300	Logging	MULT	X	
10-211000	Oil and gas extraction	MULT	X	
10-212000	Mining, except oil and gas	-	X	Indirect
10-212100	Coal mining	MULT	X	

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	Other Adj⁽²⁾
10-213000	Support activities for mining	MULT	X	
20-236100	Residential building	-	X	Indirect
20-236200	Nonresidential building	-	X	Indirect
20-237000	Heavy and civil engineering construction	ADD	X	
20-238000	Specialty trade contractors	-	X	Indirect
20-238001	Residential specialty trade contractors	MULT	X	Raked
20-238002	Nonresidential specialty trade contractors	ADD	X	Raked
31-321000	Wood products	ADD	X	
31-327000	Nonmetallic mineral products	MULT	X	
31-331000	Primary metals	ADD	X	
31-332000	Fabricated metal products	ADD	X	
31-333000	Machinery	MULT	X	
31-334000	Computer and electronic products	-	X	Indirect
31-334100	Computer and peripheral equipment	MULT	X	
31-334200	Communications equipment	MULT	X	
31-334400	Semiconductors and electronic components	MULT	X	
31-334500	Electronic instruments	MULT	X	
31-335000	Electrical equipment and appliances	MULT	X	
31-336000	Transportation equipment	ADD		
31-336001	Motor vehicles and parts	ADD		
31-337000	Furniture and related products	MULT	X	
31-339000	Miscellaneous durable goods manufacturing	MULT	X	
32-311000	Food manufacturing	MULT	X	
32-313000	Textile mills	MULT	X	
32-314000	Textile product mills	MULT	X	
32-315000	Apparel	MULT	X	
32-322000	Paper and paper products	MULT	X	
32-323000	Printing and related support activities	MULT	X	
32-324000	Petroleum and coal products	ADD	X	
32-325000	Chemicals	MULT	X	
32-326000	Plastics and rubber products	ADD	X	
32-329000	Miscellaneous nondurable goods manufacturing	ADD	X	

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	Other Adj⁽²⁾
41-423000	Durable goods	MULT	X	
41-424000	Nondurable goods	MULT	X	
41-425000	Electronic markets and agents and brokers	ADD	X	
42-441000	Motor vehicle and parts dealers	-	X	Indirect
42-441100	Automobile dealers	ADD	X	
42-442000	Furniture and home furnishings stores	MULT	X	
42-443000	Electronics and appliance stores	MULT	X	
42-444000	Building material and garden supply stores	MULT	X	
42-445000	Food and beverage stores	MULT	X	
42-446000	Health and personal care stores	MULT	X	
42-447000	Gasoline stations	MULT	X	
42-448000	Clothing and clothing accessories stores	MULT	X	
42-451000	Sporting goods, hobby, book, and music stores	MULT	X	
42-452000	General merchandise stores	-	X	Indirect
42-452100	Department stores	MULT	X	
42-453000	Miscellaneous store retailers	MULT	X	
42-454000	Nonstore retailers	MULT	X	
43-481000	Air transportation	MULT	X	
43-482000	Rail transportation	MULT	X	
43-483000	Water transportation	ADD	X	
43-484000	Truck transportation	ADD	X	
43-485000	Transit and ground passenger transportation	ADD		
43-486000	Pipeline transportation	MULT	X	
43-487000	Scenic and sightseeing transportation	ADD	X	
43-488000	Support activities for transportation	MULT	X	
43-492000	Couriers and messengers	MULT	X	
43-493000	Warehousing and storage	ADD	X	
44-220000	Utilities	MULT	X	
50-511000	Publishing industries, except Internet	MULT	X	
50-512000	Motion picture and sound recording industries	MULT	X	

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	Other Adj⁽²⁾
50-515000	Broadcasting, except Internet	MULT	X	
50-517000	Telecommunications	MULT	X	
50-518000	Data processing, hosting and related services	MULT	X	
50-519000	Other information services	MULT	X	
55-521000	Monetary authorities - central bank	MULT	X	
55-522000	Credit intermediation and related activities	-	X	Indirect
55-522100	Depository credit intermediation	MULT	X	
55-522110	Commercial banking	MULT	X	
55-523000	Securities, commodity contracts, investments	MULT	X	
55-524000	Insurance carriers and related activities	MULT	X	
55-525000	Funds, trusts, and other financial vehicles	ADD	X	
55-531000	Real estate	MULT	X	
55-532000	Rental and leasing services	MULT	X	
55-533000	Lessors of nonfinancial intangible assets	MULT	X	
60-540000	Professional and technical services	-	X	Indirect
60-541100	Legal services	MULT	X	
60-541200	Accounting and bookkeeping services	ADD	X	
60-541300	Architectural and engineering services	MULT	X	
60-541500	Computer systems design and related services	ADD	X	
60-541600	Management and technical consulting services	MULT	X	
60-550000	Management of companies and enterprises	MULT	X	
60-561000	Administrative and support services	-	X	Indirect
60-561300	Employment services	ADD	X	
60-561320	Temporary help services	ADD	X	
60-561400	Business support services	ADD	X	
60-561700	Services to buildings and dwellings	ADD	X	

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	Other Adj⁽²⁾
60-562000	Waste management and remediation services	ADD	X	
65-610000	Educational services	ADD	X	
65-621000	Ambulatory health care services	-	X	Indirect
65-621100	Offices of physicians	MULT	X	
65-621400	Outpatient care centers	MULT	X	
65-621600	Home health care services	ADD	X	
65-622000	Hospitals	ADD	X	
65-623000	Nursing and residential care facilities	-	X	Indirect
65-623100	Nursing care facilities	MULT	X	
65-624000	Social assistance	-	X	Indirect
65-624400	Child day care services	MULT	X	
70-711000	Performing arts and spectator sports	MULT	X	
70-712000	Museums, historical sites, and similar institutions	MULT	X	
70-713000	Amusements, gambling, and recreation	ADD	X	
70-721000	Accommodation	ADD	X	
70-722000	Food services and drinking places	ADD	X	
80-811000	Repair and maintenance	MULT	X	
80-812000	Personal and laundry services	MULT	X	
80-813000	Membership associations and organizations	MULT		
90-911000	Federal, except U.S. Postal Service	ADD	X	
90-919120	U.S. Postal Service	MULT	X	
90-921611	State government education	ADD	X	
90-922000	State government, excluding education	MULT	X	
90-931611	Local government education	ADD	X	
90-932000	Local government, excluding education	MULT	X	Election adjustment

⁽¹⁾Formerly part of Exhibit 14.

⁽²⁾Indirect indicates seasonal adjustment occurs at the lowest available industry level. Raked indicates residential and nonresidential specialty trade estimates are raked to the specialty trade estimates to ensure consistency. Election adjustment indicates a special adjustment for the presence/absence of poll workers in local government.

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Table 9. Model specifications for seasonal adjustment of AE AWH series⁽¹⁾

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	10/11 Day Adj	Easter/Labor Day Adj
10-000000	Mining and logging	MULT	X		X
20-000000	Construction	ADD	X		X
31-321000	Wood products	MULT	X		X
31-327000	Nonmetallic mineral products	ADD	X		X
31-331000	Primary metals	MULT	X		X
31-332000	Fabricated metal products	MULT	X		X
31-333000	Machinery	MULT	X		X
31-334000	Computer and electronic products	MULT		X	X
31-335000	Electrical equipment and appliances	MULT	X		X
31-336000	Transportation equipment	MULT	X		X
31-336001	Motor vehicles and parts	ADD	X		X
31-337000	Furniture and related products	MULT	X		X
31-339000	Miscellaneous durable goods manufacturing	MULT	X		X
32-311000	Food manufacturing	MULT	X		X
32-313000	Textile mills	MULT	X		X
32-314000	Textile product mills	MULT	X		X
32-315000	Apparel	MULT	X		X
32-322000	Paper and paper products	MULT	X		X
32-323000	Printing and related support activities	MULT	X		X
32-324000	Petroleum and coal products	ADD	X		X
32-325000	Chemicals	MULT	X		
32-326000	Plastics and rubber products	MULT	X		X
32-329000	Miscellaneous nondurable goods manufacturing	MULT	X		X
41-420000	Wholesale trade	MULT		X	X
42-000000	Retail trade	MULT		X	
43-000000	Transportation and warehousing	MULT		X	X
44-220000	Utilities	MULT	X		
50-000000	Information	MULT		X	

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	10/11 Day Adj	Easter/Labor Day Adj
55-000000	Financial activities	MULT		X	
60-000000	Professional and business services	MULT		X	X
65-000000	Education and health services	MULT		X	
70-000000	Leisure and hospitality	MULT		X	
80-000000	Other services	MULT		X	X

⁽¹⁾Formerly part of Exhibit 14.

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Table 10. Model specifications for seasonal adjustment of AE AHE series⁽¹⁾

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	10/11 Day Adj
10-000000	Mining and logging	ADD	X	
20-000000	Construction	ADD	X	
31-321000	Wood products	ADD	X	
31-327000	Nonmetallic mineral products	MULT	X	
31-331000	Primary metals	ADD	X	
31-332000	Fabricated metal products	ADD	X	
31-333000	Machinery	ADD	X	
31-334000	Computer and electronic products	ADD	X	
31-335000	Electrical equipment and appliances	ADD	X	
31-336000	Transportation equipment	MULT	X	
31-336001	Motor vehicles and parts	MULT	X	
31-337000	Furniture and related products	ADD	X	
31-339000	Miscellaneous durable goods manufacturing	ADD	X	
32-311000	Food manufacturing	ADD	X	
32-313000	Textile mills	MULT	X	
32-314000	Textile product mills	MULT	X	
32-315000	Apparel	MULT	X	
32-322000	Paper and paper products	ADD	X	
32-323000	Printing and related support activities	MULT	X	
32-324000	Petroleum and coal products	ADD	X	
32-325000	Chemicals	MULT	X	
32-326000	Plastics and rubber products	ADD	X	
32-329000	Miscellaneous nondurable goods manufacturing	ADD	X	
41-420000	Wholesale trade	ADD		X
42-000000	Retail trade	MULT		X
43-000000	Transportation and warehousing	ADD		X

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	10/11 Day Adj
44-220000	Utilities	ADD	X	
50-000000	Information	MULT		X
55-000000	Financial activities	ADD		X
60-000000	Professional and business services	ADD		X
65-000000	Education and health services	ADD	X	
70-000000	Leisure and hospitality	ADD	X	
80-000000	Other services	ADD		X

⁽¹⁾Formerly part of Exhibit 14.

Table 11. Model specifications for seasonal adjustment of AE AWOH series⁽¹⁾

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	10/11 Day Adj	Easter/Labor Day Adj
31-000000	Durable goods	ADD	X		X
32-000000	Nondurable goods	MULT	X		X

⁽¹⁾Formerly part of Exhibit 14.

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Table 12. Model specifications for seasonal adjustment of PE series⁽¹⁾

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	Other Adj
10-000000	Mining and logging	ADD	X	
20-000000	Construction	ADD	X	
31-321000	Wood products	ADD	X	
31-327000	Nonmetallic mineral products	ADD	X	
31-331000	Primary metals	ADD	X	
31-332000	Fabricated metal products	MULT	X	
31-333000	Machinery	MULT	X	
31-334000	Computer and electronic products	MULT	X	
31-335000	Electrical equipment and appliances	MULT	X	
31-336000	Transportation equipment	MULT		
31-336001	Motor vehicles and parts	ADD		
31-337000	Furniture and related products	MULT	X	
31-339000	Miscellaneous durable goods manufacturing	MULT	X	
32-311000	Food manufacturing	MULT	X	
32-313000	Textile mills	MULT	X	
32-314000	Textile product mills	MULT	X	
32-315000	Apparel	MULT	X	
32-322000	Paper and paper products	MULT	X	
32-323000	Printing and related support activities	MULT	X	
32-324000	Petroleum and coal products	ADD	X	
32-325000	Chemicals	MULT	X	

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	Other Adj
32-326000	Plastics and rubber products	ADD	X	
32-329000	Miscellaneous nondurable goods manufacturing	MULT	X	
41-420000	Wholesale trade	MULT	X	
42-000000	Retail trade	MULT	X	
43-000000	Transportation and warehousing	ADD	X	
44-220000	Utilities	MULT	X	
50-000000	Information	ADD	X	
55-000000	Financial activities	MULT	X	
60-000000	Professional and business services	MULT	X	
65-000000	Education and health services	ADD	X	
70-000000	Leisure and hospitality	ADD	X	
80-000000	Other services	MULT	X	

⁽¹⁾Formerly part of Exhibit 14.

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Table 13. Model specifications for seasonal adjustment of PE AWH series⁽¹⁾

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	10/11 Day Adj	Easter/Labor Day Adj
10-000000	Mining and logging	MULT	X		X
20-000000	Construction	ADD	X		X
31-321000	Wood products	MULT	X		X
31-327000	Nonmetallic mineral products	ADD	X		X
31-331000	Primary metals	MULT	X		X
31-332000	Fabricated metal products	ADD	X		X
31-333000	Machinery	ADD	X		X
31-334000	Computer and electronic products	MULT	X		X
31-335000	Electrical equipment and appliances	MULT	X		X
31-336000	Transportation equipment	ADD	X		X
31-336001	Motor vehicles and parts	ADD	X		X
31-337000	Furniture and related products	MULT	X		X
31-339000	Miscellaneous durable goods manufacturing	MULT	X		X
32-311000	Food manufacturing	MULT	X		X
32-313000	Textile mills	ADD	X		X
32-314000	Textile product mills	MULT	X		X

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	10/11 Day Adj	Easter/Labor Day Adj
32-315000	Apparel	MULT	X		X
32-322000	Paper and paper products	MULT	X		X
32-323000	Printing and related support activities	MULT	X		X
32-324000	Petroleum and coal products	MULT	X		X
32-325000	Chemicals	MULT	X		
32-326000	Plastics and rubber products	MULT	X		X
32-329000	Miscellaneous nondurable goods manufacturing	MULT	X		X
41-420000	Wholesale trade	MULT		X	X
42-000000	Retail trade	MULT		X	
43-000000	Transportation and warehousing	MULT		X	X
44-220000	Utilities	MULT	X		
50-000000	Information	MULT		X	
55-000000	Financial activities	MULT		X	
60-000000	Professional and business services	MULT		X	X
65-000000	Education and health services	MULT		X	
70-000000	Leisure and hospitality	MULT		X	
80-000000	Other services	MULT		X	X

⁽¹⁾Formerly part of Exhibit 14.

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Table 14. Model specifications for seasonal adjustment of PE AHE series⁽¹⁾

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	10/11 Day Adj
10-000000	Mining and logging	MULT	X	
20-000000	Construction	MULT	X	
31-321000	Wood products	MULT	X	
31-327000	Nonmetallic mineral products	MULT	X	
31-331000	Primary metals	MULT	X	
31-332000	Fabricated metal products	ADD	X	
31-333000	Machinery	MULT	X	
31-334000	Computer and electronic products	MULT	X	
31-335000	Electrical equipment and appliances	MULT	X	
31-336000	Transportation equipment	ADD	X	

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	10/11 Day Adj
31-336001	Motor vehicles and parts	MULT	X	
31-337000	Furniture and related products	MULT	X	
31-339000	Miscellaneous durable goods manufacturing	ADD	X	
32-311000	Food manufacturing	MULT	X	
32-313000	Textile mills	MULT	X	
32-314000	Textile product mills	MULT	X	
32-315000	Apparel	MULT	X	
32-322000	Paper and paper products	MULT	X	
32-323000	Printing and related support activities	MULT	X	
32-324000	Petroleum and coal products	ADD	X	
32-325000	Chemicals	MULT	X	
32-326000	Plastics and rubber products	MULT	X	
32-329000	Miscellaneous nondurable goods manufacturing	MULT	X	
41-420000	Wholesale trade	MULT		X
42-000000	Retail trade	MULT		X
43-000000	Transportation and warehousing	MULT		X
44-220000	Utilities	MULT	X	
50-000000	Information	MULT		X
55-000000	Financial activities	MULT		X
60-000000	Professional and business services	MULT		X
65-000000	Education and health services	ADD	X	
70-000000	Leisure and hospitality	ADD	X	
80-000000	Other services	ADD		X

⁽¹⁾Formerly part of Exhibit 14.

Table 15. Model specifications for seasonal adjustment of PE AWOH series⁽¹⁾

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	10/11 Day Adj	Easter/Labor Day Adj
31-000000	Durable goods	ADD	X		X
32-000000	Nondurable goods	ADD	X		X

⁽¹⁾Formerly part of Exhibit 14.

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Table 16. Model specifications for seasonal adjustment of WE series⁽¹⁾

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	Other Adj ⁽²⁾
10-000000	Mining and logging	MULT	X	
20-000000	Construction	MULT	X	
31-000000	Durable goods	MULT	X	
32-000000	Nondurable goods	MULT	X	

CES Industry Code	CES Industry Title	Mode	4/5 Week Adj	Other Adj⁽²⁾
41-420000	Wholesale trade	MULT	X	
42-000000	Retail trade	MULT	X	
43-000000	Transportation and warehousing	ADD	X	
44-220000	Utilities	MULT	X	
50-000000	Information	MULT	X	
55-520000	Finance and insurance	MULT	X	
55-530000	Real estate and rental and leasing	MULT	X	
60-540000	Professional and technical services	ADD	X	
60-550000	Management of companies and enterprises	MULT	X	
60-560000	Administrative and waste services	ADD	X	
65-610000	Educational services	ADD	X	
65-620000	Health care and social assistance	MULT	X	
70-710000	Arts, entertainment, and recreation	MULT	X	
70-720000	Accommodation and food services	ADD	X	
80-000000	Other services	MULT	X	
90-910000	Federal	ADD	X	
90-920000	State government	ADD	X	
90-930000	Local government	ADD	X	Election adjustment

⁽¹⁾Formerly part of Exhibit 14.

⁽²⁾Election adjustment indicates a special adjustment for the presence/absence of poll workers in local government.

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