

CES National Benchmark Article

BLS Establishment Survey National Estimates Revised to Incorporate March 2024 Benchmarks

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Table of Contents

Summary of the revisions	3
Overview	4
Seasonally adjusted estimates	4
Not seasonally adjusted estimates	5
Not seasonally adjusted revisions	5
Benchmark revision effects for other data types	10
Net birth-death revisions	14
Forecasted vs. actual net birth-death	15
Net birth-death adjustments to the post-benchmark period	15
Reconstructions	18
Computer and peripheral equipment manufacturing reconstruction	18
Historical reconstructions	19
General medical and surgical hospitals reconstruction	19
Electric power generation reconstruction	20
Changes to the CES published series	22
Availability of revised data	34
Table of figures	35

Summary of the revisions

With the release of January 2025 data on February 7, 2025, the Bureau of Labor Statistics (BLS) introduced its annual revision to national estimates of employment, hours, and earnings from the Current Employment Statistics (CES) monthly survey of nonfarm establishments.

The March 2024 benchmarked, seasonally adjusted employment level for total nonfarm employment is 157,517,000. The not seasonally adjusted benchmarked employment level is 156,612,000.

Compared with the sample-based, seasonally adjusted published estimate for March 2024, total nonfarm employment had a revision of -589,000 or -0.4 percent. The not seasonally adjusted total nonfarm employment estimate was revised by -598,000 or -0.4 percent.

[Table 1](#) presents revised total nonfarm employment data on a seasonally adjusted basis for January 2024 through December 2024. The revised data for April 2024 forward incorporate the effect of applying the rate of change measured by the sample to the new benchmark employment level, as well as updated net birth-death model forecasts and new seasonal adjustment factors. Revisions to November and December also reflect the incorporation of additional sample receipts. For more information about the methodology of benchmarking in the CES program, see [Benchmark](#) in the Calculations section of the CES Handbook of Methods.

Table 1. Differences in seasonally adjusted levels and over-the-month changes, total nonfarm employment, January to December 2024 (in thousands)

2024	Levels			Over-the-month Changes		
	As Revised	As Previously Published	Difference	As Revised	As Previously Published	Difference
January	157,049	157,560	-511	119	256	-137
February	157,271	157,796	-525	222	236	-14
March	157,517	158,106	-589	246	310	-64
April	157,635	158,214	-579	118	108	10
May	157,828	158,430	-602	193	216	-23
June	157,915	158,548	-633	87	118	-31
July	158,003	158,692	-689	88	144	-56
August	158,074	158,770	-696	71	78	-7
September	158,314	159,025	-711	240	255	-15
October	158,358	159,068	-710	44	43	1
November	158,619	159,280	-661	261	212	49
December ^(p)	158,926	159,536	-610	307	256	51

Footnotes

^(p) Preliminary

[To Table of Figures](#)

Overview

Establishment survey benchmarking is done each year to align employment estimates from the survey with employment counts derived primarily from the administrative file of employees covered by Unemployment Insurance (UI). All employers covered by UI laws are required to report employment and wage information to the appropriate state UI agency four times per year. The UI data are obtained and edited by each state's Labor Market Information agency. They are tabulated and published through the BLS Quarterly Census of Employment and Wages (QCEW) program. Both the QCEW and CES categorize their data using the North American Industry Classification System (NAICS). About 97 percent of total nonfarm employment within the scope of the establishment survey is covered by UI and is available to the CES program via QCEW records.

An employment count for the remaining 3 percent is constructed from other sources, primarily records from the Railroad Retirement Board and U.S. Census Bureau data from County Business Patterns and the Annual Survey of Public Employment and Payroll. This 3 percent is referred to as noncovered employment. The combination of QCEW and noncovered employment data make up the benchmark level. The full benchmark employment level developed for March replaces the March sample-based estimate for each basic cell.

The total annual revision is the difference between the benchmark level for a given March and the published March sample-based employment estimate. The overall accuracy of the establishment survey is usually gauged by the size of the benchmark revision, which is often regarded as a proxy for total survey error. Typically, the total revision is equal to the benchmark revision. However, in years with historical reconstructions, affected CES series are re-estimated prior to benchmarking. The benchmark revision, in these cases, is the difference between the benchmark level and the newly reconstructed sample-based estimate. The benchmark revision is the difference between two independently derived employment counts, each subject to its own error sources.

To create a continuous time series between the new March benchmark level and historical sample-based data from the prior March benchmark level, employment estimates for the months between the most recent March benchmark and the previous year's benchmark are adjusted using a linear "wedge-back" procedure. This procedure assumes that the total estimation error accumulated at a steady rate since the last benchmark. For the 9 months following the March benchmark (also called the post-benchmark period), BLS applies previously derived over-the-month sample changes to the revised March level to get the revised estimates. New net birth-death model forecasts are also calculated and applied during post-benchmark estimation. More information on benchmarks in the CES program is available in [Benchmark](#) in the Calculation section of the CES Handbook of Methods.

Seasonally adjusted estimates

BLS seasonally adjusts 5 years of CES data with each annual benchmark for all industries and directly estimated data types. However, reconstructed series are seasonally adjusted over their revised time spans if the revised timespan is greater than 5 years. More information about seasonal adjustment of CES series is available on the [CES Seasonal Adjustment](#) webpage.

[Table 2](#) presents revised employment data on a seasonally adjusted basis for March 2024 by major industry sector. The revision to seasonally adjusted total nonfarm employment is -589,000.

Table 2. Seasonally adjusted employment revisions for major industry sectors, March 2024 (in thousands)

CES Industry Code	CES Industry Title	As Revised	As Previously Published	Differences	
				Amount	Percent
00-000000	Total nonfarm	157,517	158,106	-589	-0.4
05-000000	Total private	134,216	134,837	-621	-0.5
06-000000	Goods-producing	21,645	21,801	-156	-0.7
07-000000	Service-providing	135,872	136,305	-433	-0.3
08-000000	Private service-providing	112,571	113,036	-465	-0.4
10-000000	Mining and logging	637	643	-6	-0.9
20-000000	Construction	8,170	8,207	-37	-0.5
30-000000	Manufacturing	12,838	12,951	-113	-0.9
31-000000	Durable goods	7,994	8,140	-146	-1.8
32-000000	Nondurable goods	4,844	4,811	33	0.7
40-000000	Trade, transportation, and utilities	28,891	28,962	-71	-0.2
41-420000	Wholesale trade	6,130.20	6,158.90	-28.7	-0.5
42-000000	Retail trade	15,545.30	15,662.00	-116.7	-0.8
43-000000	Transportation and warehousing	6,626.10	6,553.40	72.7	1.1
44-220000	Utilities	589	587.4	1.6	0.3
50-000000	Information	2,959	3,019	-60	-2
55-000000	Financial activities	9,152	9,226	-74	-0.8
60-000000	Professional and business services	22,637	22,953	-316	-1.4
65-000000	Private education and health services	26,214	26,087	127	0.5
70-000000	Leisure and hospitality	16,772	16,893	-121	-0.7
80-000000	Other services	5,946	5,896	50	0.8
90-000000	Government	23,301	23,269	32	0.1

[To Table of Figures](#)

Not seasonally adjusted estimates

Benchmark employment levels for March are compared to CES estimates that have not been seasonally adjusted to calculate the new March employment level. Twenty-one months of not seasonally adjusted CES estimates for all data types are revised based on this new March level, prior to seasonal adjustment. Revisions to not seasonally adjusted CES estimates are described below.

Not seasonally adjusted revisions

[Table 3](#) presents the not seasonally adjusted employment benchmarks for March 2024 by major industry sector. The total revision to not seasonally adjusted total nonfarm employment is -598,000.

Table 3. Not seasonally adjusted employment benchmarks for major industry sectors, March 2024 (in thousands)

CES Industry Code	CES Industry Title	Benchmark	Estimate ⁽¹⁾	Differences	
				Amount	Percent
00-000000	Total nonfarm	156,612	157,210	-598	-0.4
05-000000	Total private	132,995	133,630	-635	-0.5
06-000000	Goods-producing	21,359	21,466	-107	-0.5
07-000000	Service-providing	135,253	135,744	-491	-0.4
08-000000	Private service-providing	111,636	112,164	-528	-0.5
10-000000	Mining and logging	630	640	-10	-1.6
20-000000	Construction	7,939	7,971	-32	-0.4
30-000000	Manufacturing	12,790	12,855	-65	-0.5
31-000000	Durable goods	7,971	8,070	-99	-1.2
32-000000	Nondurable goods	4,819	4,785	34	0.7
40-000000	Trade, transportation, and utilities	28,614	28,702	-88	-0.3
41-420000	Wholesale trade	6,105.20	6,134	-28.8	-0.5
42-000000	Retail trade	15,366.80	15,492.5	-125.7	-0.8
43-000000	Transportation and warehousing	6,553.80	6,489	64.8	1
44-220000	Utilities	587.9	586.6	1.3	0.2
50-000000	Information	2,940	3,003	-63	-2.1
55-000000	Financial activities	9,094	9,170	-76	-0.8
60-000000	Professional and business services	22,396	22,776	-380	-1.7
65-000000	Private education and health services	26,325	26,182	143	0.5
70-000000	Leisure and hospitality	16,362	16,478	-116	-0.7
80-000000	Other services	5,905	5,853	52	0.9
90-000000	Government	23,617	23,580	37	0.2

Footnotes

⁽¹⁾ With the 2024 benchmark, CES reconstructed several national employment series. A recoding of establishments in the QCEW resulted in about 50,000 in employment in computer and peripheral equipment manufacturing (31-334100) being moved into corporate, subsidiary, and regional managing offices (60-551114). Affected series were reconstructed for their history going back to January 2005. For more information, see the Reconstructions section in the [2024 CES Benchmark Article](#).

[To Table of Figures](#)

Benchmarks for more detailed industries are available on the [CES detailed industry tables](#) webpage.

[Table 4](#) below shows the recent history of not seasonally adjusted total nonfarm percent and level benchmark revisions. Over the prior 10 years, the annual benchmark revision at the total

nonfarm level has averaged 0.1 percent (in absolute terms), with a range of less than 0.05 percent to 0.3 percent.

The differences listed in [table 4](#) and beyond reflect the error due to normal benchmarking procedures after the incorporation of reconstructions. Those years are footnoted.

Table 4. Percent and level differences between nonfarm employment benchmarks and estimates by industry supersector, March 2014 to 2024 (in thousands)

CES Industry Code	CES Industry Title	Type	2014	2015 ⁽¹⁾	2016	2017 ⁽²⁾	2018 ⁽³⁾	2019 ⁽⁴⁾	2020	2021	2022 ⁽⁵⁾	2023	2024 ⁽⁶⁾
00-000000	Total nonfarm	Percent	⁽⁷⁾	-0.1	-0.1	0.1	⁽⁷⁾	-0.3	-0.1	⁽⁷⁾	0.3	-0.1	-0.4
		Level	67	-172	-81	135	-16	-489	-121	-7	506	-187	-598
05-000000	Total private	Percent	0.1	-0.2	-0.1	0.1	-0.1	-0.4	-0.1	-0.2	0.5	-0.2	-0.5
		Level	105	-232	-151	133	-104	-505	-184	-256	607	-249	-635
10-000000	Mining and logging	Percent	-1.8	-2.2	-3.2	-4.6	-1.1	-2.1	-4	-11.5	-3.1	⁽⁷⁾	-1.6
		Level	-16	-19	-22	-30	-8	-15	-27	-63	-18	⁽⁷⁾	-10
20-000000	Construction	Percent	1.6	0.6	0.7	0.8	0.6	-0.1	⁽⁷⁾	-0.6	0.9	0.6	-0.4
		Level	90	39	47	52	44	-4	2	-41	70	44	-32
30-000000	Manufacturing	Percent	0.4	-0.1	0.5	0.1	-0.1	⁽⁷⁾	-0.6	-0.3	0.2	-0.3	-0.5
		Level	43	-12	58	15	-18	-4	-75	-42	22	-44	-65
40-000000	Trade, transportation, and utilities	Percent	-0.1	⁽⁷⁾	-0.4	0.3	-0.3	-0.4	0.1	1.1	0.1	-0.1	-0.3
		Level	-31	-5	-110	75	-77	-117	24	307	32	-35	-88
41-420000 ⁽⁸⁾	Wholesale trade	Percent	-0.8	-0.7	-1.1	-0.4	-0.9	-0.7	-0.8	-0.4	1.7	0.8	-0.5
		Level	-45.4	-41.3	-66.6	-21.2	-54.4	-38.6	-48	-23.6	101.1	49.8	-28.8
42-000000 ⁽⁸⁾	Retail trade	Percent	⁽⁷⁾	-0.2	-0.8	0.1	-0.6	-1	-0.5	0.4	-1.6	0.3	-0.8
		Level	5.5	-23.5	-118.2	15.4	-96.4	-150.8	-78.3	57.9	-252.2	42.6	-125.7
43-000000 ⁽⁸⁾	Transportation and warehousing	Percent	0.2	1.4	1.7	1.6	1.4	1.4	2.6	4.5	2.6	-2.2	1
		Level	9.7	65.3	83.5	79.8	72.7	75.8	148.9	270.1	170.1	-145.1	64.8
44-220000 ⁽⁸⁾	Utilities	Percent	-0.1	-0.8	-1.6	0.2	0.3	-0.7	0.2	0.5	2.4	3.1	0.2
		Level	-0.6	-4.7	-8.7	1	1.8	-4.1	1.1	2.8	13.3	17.5	1.3
50-000000	Information	Percent	2.4	-1.6	-0.1	2.5	2.1	1.2	0.5	3	2.7	-1.2	-2.1
		Level	66	-44	-2	70	59	35	14	84	80	-36	-63
55-000000	Financial activities	Percent	0.2	-0.1	⁽⁷⁾	0.1	-0.1	0.8	0.3	-0.7	1.1	0.6	-0.8
		Level	19	-9	-4	7	-12	68	25	-64	94	55	-76
60-000000	Professional and business services	Percent	-0.8	-0.6	-0.6	-1.3	-0.4	-0.8	-0.6	1	1	-0.5	-1.7
		Level	-147	-110	-125	-270	-72	-159	-123	218	230	-113	-380
65-000000	Private education and health services	Percent	-0.1	⁽⁷⁾	-0.4	0.3	⁽⁷⁾	-0.4	-0.2	0.5	-0.3	-0.2	0.5
		Level	-16	-7	-83	70	5	-95	-47	125	-69	-46	143
70-000000	Leisure and hospitality	Percent	0.3	-0.3	0.7	0.8	⁽⁷⁾	-1.1	0.2	-4.4	1.1	-0.2	-0.7
		Level	38	-45	102	126	-4	-170	31	-572	161	-29	-116
80-000000	Other services	Percent	1.1	-0.4	-0.2	0.3	-0.4	-0.8	-0.1	-3.9	0.1	-0.8	0.9
		Level	59	-20	-12	18	-21	-44	-8	-208	5	-45	52
90-000000	Government	Percent	-0.2	0.3	0.3	⁽⁷⁾	0.4	0.1	0.3	1.1	-0.5	0.3	0.2
		Level	-38	60	70	2	88	16	63	249	-101	62	37

Footnotes

- (1) With the 2015 benchmark, CES reconstructed the national employment series 65-624120, services for the elderly and persons with disabilities back to January 2000. CES previously reconstructed this series with the 2013 benchmark; however, between the 2013 and 2015 benchmark, a better source of information for the employment within NAICS 62412 for the state of California was found. The inclusion of the reconstructed series resulted in total nonfarm and total private employment that was 27,000 less than the originally published March 2015 estimate level. The difference between the benchmarked and originally published March 2015 estimate level is -199,000 or -0.1 percent. This table displays March 2015 data after accounting for the decrease of 27,000 from the reconstructed series. Similarly, for the private education and health services supersector, this table displays March 2015 data after incorporating the reconstructed series. For more information about this reconstruction, see the Reconstruction section of the [2015 CES Benchmark Article](#).
- (2) With the 2017 benchmark, CES reconstructed the national employment series 60-561613, security guards and patrols and armored car services back to October 2016 to correct a microdata error. The inclusion of the reconstructed series resulted in total nonfarm and total private employment that was 3,000 more than the originally published March 2017 estimate level. The difference between the benchmarked and originally published March 2017 estimate level is 138,000 or 0.1 percent. This table displays March 2017 data after accounting for the increase of 3,000 from the reconstructed series. Similarly, for the professional and business services supersector, this table displays March 2017 data after incorporating the reconstructed series. For more information, see the Reconstructions section in the [2017 CES Benchmark Article](#).
- (3) With the 2018 benchmark, CES reconstructed several national employment series. A recoding effort in the QCEW resulted in about 336,000 in employment in wholesale trade agents and brokers (41-425120) moved into other series within the wholesale trade, retail trade, transportation and warehousing, and professional and business services major industry sectors. Affected basic-level series were reconstructed for their entire history, generally back to January 1990. Additionally, a reclassification of a state employer to private ownership caused a shift of about 17,000 in employment from the CES series other state government (90-922999) into services for the elderly and persons with disabilities (65-624120). Affected basic-level series were reconstructed from March 2018 back to January 2018. For more information about this reconstruction, see the Reconstruction section in the [2018 CES Benchmark Article](#).
- (4) With the 2019 benchmark, BLS reconstructed some national employment series in transportation to correct an error in rail transportation (43-482000), which had resulted in 16,000 in employment being double counted. The reconstruction removed the double-counted employment and affected aggregates of rail transportation, up to and including total nonfarm, back to January 1990. While the difference between the benchmarked and originally published March 2019 estimate level is -505,000, or -0.3 percent, this table displays March 2019 data after accounting for the removal of 16,000 from the published series. For more information, see the Reconstructions section in the [2019 CES Benchmark Article](#).
- (5) With the 2022 benchmark, BLS reconstructed several national employment series. A recoding effort in the QCEW resulted in about 68,000 in employment in electronic shopping and mail-order houses (42-454100) being moved into corporate, subsidiary, and regional managing offices (60-551114). Affected series were reconstructed for their entire history going back to January 1990. Additionally, the CES program found that some QCEW employment microdata submitted for services for the elderly and persons with disabilities (NAICS 624120) was erroneously reported for the first quarter of 2022. CES imputed the March 2022 level for this industry, and the new level was approximately 83,000 greater than the originally reported QCEW level. For more information, see the Reconstructions and Adjustments to population data sections in the [2022 CES Benchmark Article](#).
- (6) With the 2024 benchmark, CES reconstructed several national employment series. A recoding of establishments in the QCEW resulted in about 50,000 in employment in computer and peripheral equipment manufacturing (31-334100) being moved into corporate, subsidiary, and regional managing offices (60-551114). Affected series were reconstructed for their history going back to January 2005. For more information, see the Reconstructions section in the [2024 CES Benchmark Article](#).
- (7) Absolute revision is less than 0.05 percent or fewer than 500 employees.
- (8) Indented industries are part of trade, transportation, and utilities.

[To Table of Figures](#)

Benchmark revision effects for other data types

Benchmarking also affects the series for production and nonsupervisory employees (PE) and women employees (WE). There are no benchmark employment levels for these series; they are revised by preserving ratios of employment for the particular data type to the all employee (AE) level prior to benchmarking, and then applying these ratios to the revised all employee level. These figures are calculated at the basic cell level and then aggregated to produce the summary estimates. Average weekly hours (AWH), average hourly earnings (AHE), and, in manufacturing industries, average weekly overtime hours (AWOH) are not benchmarked; they are estimated solely from reports supplied by survey respondents at the basic estimating cell level. New employment benchmarks can additionally affect indirectly estimated data types. For more information on indirectly estimated data types, see [Derivative data](#) in the Calculations section of the CES Handbook of Methods.

[Table 5](#) lists directly estimated data types and their common abbreviations. Directly estimated data types except for AE are collectively called non-AE data types.

Table 5. Directly estimated data types

Data Type	Abbreviation
All employees	AE
Production and nonsupervisory employees	PE
Women employees	WE
Average weekly hours of all employees	AE AWH
Average hourly earnings of all employees	AE AHE
Average weekly overtime hours of all employees	AE AWOH
Average weekly hours of production and nonsupervisory employees	PE AWH
Average hourly earnings of production and nonsupervisory employees	PE AHE
Average weekly overtime hours of production and nonsupervisory employees	PE AWOH

[To Table of Figures](#)

The aggregate industry levels of the hours and earnings series are derived as a weighted average. AE and PE estimates for basic cells act as weights for their respective hours and earnings estimates for broader industry groupings. Adjustments of AE estimates to new benchmarks may alter the implicit 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 must 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 6](#) and [table 7](#) provide information on the not seasonally adjusted levels of major industry sector hours and earnings series resulting from the March 2024 benchmark. At the total private level, there was no change in average weekly hours estimates for AE and PE from the previously

published level. Total private average hourly earnings increased by 2 cents for AE and PE from the previously published level.

Benchmark effects on hours and earnings for more detailed industries are available on the [CES detailed industry tables](#) webpage.

Table 6. Effect of March 2024 benchmark revisions to all employees average weekly hours and average hourly earnings estimates, major industry sectors

CES Industry Code	CES Industry Title	Average Weekly Hours			Average Hourly Earnings		
		Estimated	Revised	Difference	Estimated	Revised	Difference
05-000000	Total private	34.2	34.2	0	\$34.63	\$34.65	\$0.02
06-000000	Goods-producing	39.8	39.8	0	35.21	35.21	0
08-000000	Private service-providing	33.1	33.1	0	34.5	34.52	0.02
10-000000	Mining and logging	45.2	45.1	-0.1	39.13	39.18	0.05
20-000000	Construction	39	39	0	37.68	37.66	-0.02
30-000000	Manufacturing	40.1	40.1	0	33.51	33.5	-0.01
31-000000	Durable goods	40.7	40.7	0	35.36	35.41	0.05
32-000000	Nondurable goods	39.1	39.1	0	30.25	30.23	-0.02
40-000000	Trade, transportation, and utilities	33.6	33.6	0	29.77	29.78	0.01
41-420000	Wholesale trade	38.9	38.9	0	37.36	37.33	-0.03
42-000000	Retail trade	29.4	29.4	0	24.29	24.3	0.01
43-000000	Transportation and warehousing	37.8	37.7	-0.1	30.41	30.41	0
44-220000	Utilities	42	42	0	51.12	51.11	-0.01
50-000000	Information	36.2	36.3	0.1	49.09	49.13	0.04
55-000000	Financial activities	37.3	37.4	0.1	45	45.04	0.04
60-000000	Professional and business services	36.3	36.3	0	41.63	41.62	-0.01
65-000000	Private education and health services	33.1	33.1	0	33.79	33.93	0.14
70-000000	Leisure and hospitality	25.5	25.5	0	21.9	21.87	-0.03
80-000000	Other services	32.3	32.2	-0.1	31.29	31.66	0.37

[To Table of Figures](#)

Table 7. Effect of March 2024 benchmark revisions to production and nonsupervisory employee average weekly hours and average hourly earnings estimates, major industry sectors

CES Industry Code	CES Industry Title	Average Weekly Hours			Average Hourly Earnings		
		Estimated	Revised	Difference	Estimated	Revised	Difference
05-000000	Total private	33.6	33.6	0	\$29.76	\$29.78	\$0.02
06-000000	Goods-producing	40.5	40.4	-0.1	30.62	30.62	0
08-000000	Private service-providing	32.5	32.5	0	29.58	29.61	0.03
10-000000	Mining and logging	47.7	47.5	-0.2	36.19	36.23	0.04
20-000000	Construction	39.5	39.5	0	35.16	35.15	-0.01
30-000000	Manufacturing	40.7	40.6	-0.1	27.42	27.41	-0.01
31-000000	Durable goods	41.1	41	-0.1	28.85	28.88	0.03
32-000000	Nondurable goods	40	40	0	25.08	25.07	-0.01
40-000000	Trade, transportation, and utilities	33.6	33.6	0	25.87	25.9	0.03
41-420000	Wholesale trade	38.9	38.9	0	31.01	30.98	-0.03
42-000000	Retail trade	29.9	30	0.1	20.81	20.84	0.03
43-000000	Transportation and warehousing	36.9	36.9	0	28.99	29	0.01
44-220000	Utilities	42.3	42.3	0	45.21	45.23	0.02
50-000000	Information	35.6	35.7	0.1	40.51	40.57	0.06
55-000000	Financial activities	36.7	36.7	0	35.46	35.47	0.01
60-000000	Professional and business services	36.1	36.1	0	35.06	35.02	-0.04
65-000000	Private education and health services	32.3	32.2	-0.1	30.89	31.02	0.13
70-000000	Leisure and hospitality	24.2	24.2	0	19.42	19.39	-0.03
80-000000	Other services	31.3	31.3	0	27.02	27.38	0.36

[To Table of Figures](#)

Net birth-death revisions

The difference between CES estimates and the population employment results from various sources. Disaggregating it into its components is complex. Both data sources are subject to nonresponse error and reporting error. Additionally, the CES estimates are subject to sampling error and business birth and death modeling error.

The CES sample alone is not sufficient for estimating the total nonfarm employment level because each month, new establishments generate employment that cannot be captured through the sample. There is an unavoidable lag between an establishment opening for business and its appearance on the CES sample frame. The sample frame is built from UI quarterly tax records. These records cover virtually all U.S. employers and include business births, but they only become available for updating the CES sampling frame 7 to 9 months after the reference month. After the births appear on the frame, there is also time required for sampling, contacting, and soliciting cooperation from the establishments, and verifying the initial data provided. In practice, BLS cannot sample and begin to collect data from new establishments until they are at least a year old.

BLS has researched both sample-based and model-based approaches to measuring employment from business births and deaths that have not yet appeared on the UI universe frame. The research demonstrated that sampling for births was not feasible in the very short CES production timeframes, so BLS uses a model-based approach to account for this employment. This model incorporates two components. The first component is an indirect imputation for business deaths. 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 from the first component. More information on the CES birth-death model is available in [Business births and deaths](#) in the Calculation section of the CES Handbook of Methods.

An analysis of error in the birth-death model and the effect of those errors on CES estimation follows.

Forecasted vs. actual net birth-death

Only error from the model-based component of CES estimation is directly measurable. Error from this component is measured by comparing the actual net of births and deaths with the model-based forecast that was used in the CES sample-based estimates during the previous benchmark year. Most recently, the data from April 2023 to March 2024 can be measured. As [table 8](#) shows, the actual net birth-death from April 2023 to March 2024 was approximately 256,000 below the forecast used in the CES monthly estimates for the same period.

Table 8. Differences between forecasted and actual net birth-death, total private employment, April 2023 to March 2024 (in thousands)

Benchmark 2024	2023									2024			Total
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Actual Net Birth-Death	389	208	41	217	74	-105	335	-9	-42	-10	88	-77	1,109
Forecast Net Birth-Death	368	244	81	295	110	-117	425	7	-57	-121	151	-21	1,365
Difference	21	-36	-40	-78	-36	12	-90	-16	15	111	-63	-56	-256
Cumulative Difference	21	-15	-55	-133	-169	-157	-247	-263	-248	-137	-200	-256	

[To Table of Figures](#)

Net birth-death adjustments to the post-benchmark period

From April 2024 to December 2024, also called the post-benchmark period, CES estimates were recalculated for each month based primarily on new benchmark levels and new net birth-death forecasts. Net birth-death forecasts were revised to incorporate information from the most recent year of universe employment counts. [Table 9](#) shows the net birth-death values for the supersectors over the post-benchmark period. From April 2024 to December 2024, the net birth-death model cumulatively added 1,104,000 jobs, compared with 1,356,000 in the previously published April 2024 to December 2024 employment estimates.

Table 9. Net birth-death forecasts by industry supersector, April to December 2024 (in thousands)

CES Industry Code	CES Industry Title	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Cumulative Total
10-000000	Mining and logging	0	0	0	0	0	0	1	0	0	1
20-000000	Construction	48	31	15	11	7	-1	25	-10	-15	111
30-000000	Manufacturing	6	6	2	1	1	1	5	2	2	26
40-000000	Trade, transportation, and utilities	19	15	0	22	13	-4	53	12	7	137
41-420000 ⁽¹⁾	Wholesale trade	3	-1	-6	5	1	-7	14	1	1	11
42-000000 ⁽¹⁾	Retail trade	12	13	7	11	10	3	23	2	0	81
43-000000 ⁽¹⁾	Transportation and warehousing	4	3	-1	6	2	0	15	9	6	44
44-220000 ⁽¹⁾	Utilities	0	0	0	0	0	0	1	0	0	1
41-000000	Information	10	5	-1	6	3	-4	11	4	2	36
55-000000	Financial activities	7	6	-4	11	2	-9	32	2	8	55
60-000000	Professional and business services	132	31	-39	76	10	-37	117	7	-26	271
65-000000	Private education and health services	51	9	-27	49	11	-22	75	12	-16	142
70-000000	Leisure and hospitality	89	84	72	64	22	-47	13	-18	-3	276
80-000000	Other services	22	2	8	9	1	-6	17	1	-5	49
Total private net birth-death forecast		384	189	26	249	70	-129	349	12	-46	1,104

Footnotes

⁽¹⁾ Indented industries are part of trade, transportation, and utilities.

[To Table of Figures](#)

Effective with the release of preliminary January 2025 employment estimates in February 2025, BLS modified the ARIMA-based component of the birth-death model by incorporating current sample information to inform the forecasts. This modification was only applied to re-calculated months from April to October, known as the post-benchmark period. November, December, and January, as well as future monthly estimates, use birth-death components calculated without this modification. More information about this adjustment is available on the [CES birth-death frequently asked questions](#) page.

The sum of net birth-death forecasts for the 7-month post-benchmark period is 101,000 lower than the forecasts used in monthly estimation for the same period. It is 228,000 lower than it would have been had this adjustment not been used. See [table 10](#) below for effects of this birth-death modification on major industry sectors.

Table 10. Comparison of cumulative preliminary, usual post-benchmark, and modified post-benchmark net birth-death forecasts for April to October of 2024 (in thousands)

CES Industry Code	CES Industry Title	Forecast			Differences		
		Preliminary	Usual Post-Benchmark	Modified Post-Benchmark	Usual Minus Preliminary	Modified Minus Preliminary	Modified Minus Usual
10-000000	Mining and logging	3	3	1	0	-2	-2
20-000000	Construction	142	139	136	-3	-6	-3
30-000000	Manufacturing	28	34	22	6	-6	-12
40-000000	Trade, transportation, and utilities	153	176	118	23	-35	-58
41-420000 ⁽¹⁾	Wholesale trade	13	14	9	1	-4	-5
42-000000 ⁽¹⁾	Retail trade	91	108	79	17	-12	-29
43-000000 ⁽¹⁾	Transportation and warehousing	48	53	29	5	-19	-24
44-220000 ⁽¹⁾	Utilities	1	1	1	0	0	0
50-000000	Information	31	36	30	5	-1	-6
55-000000	Financial activities	50	58	45	8	-5	-13
60-000000	Professional and business services	314	337	290	23	-24	-47
65-000000	Private education and health services	151	186	146	35	-5	-40
70-000000	Leisure and hospitality	321	345	297	24	-24	-48
80-000000	Other services	46	52	53	6	7	1
Total private net birth-death forecast		1,239	1,366	1,138	127	-101	-228

Footnotes

⁽¹⁾ Indented industries are part of trade, transportation, and utilities.

[To Table of Figures](#)

Reconstructions

Computer and peripheral equipment manufacturing reconstruction

QCEW's Annual Refiling Survey identified incorrectly coded establishments for the first quarter of 2024, moving a significant amount of employment out of computer and peripheral equipment manufacturing (31-334100) into corporate, subsidiary, and regional managing offices (60-551114) for March 2024.

Due to the magnitude of the change, the employment and its associated hours and earnings were moved out of 31-334100 and into 60-551114 before benchmarking. For CES purposes, this resulted in about 50,000 in employment in 31-334100 moving into 60-551114 for March 2024. Both industries and their summary series up to the major industry sector were reconstructed for all employees (AE), production and nonsupervisory employees (PE), women employees (WE), and AE and PE hours, earnings, and overtime.

The detailed industries and their summary series begin in 1990 for most data types, except AE-AWH, AE-AHE, and AE-AOH, which begin in 2006. Research showed the incorrect coding began in the first quarter of 2005. Therefore, the series were reconstructed from 2005 forward.

Basic-level reconstruction methods

A part of the CES industry 31-334100 in the durable goods industry sector was redistributed into 60-551114 in the professional and business services major industry sector.

A ratio of employment moving out of computer and electronic product manufacturing (31-334000) amounting to 4.5 percent was calculated from QCEW data for March 2024. Note that for 31-334100 only AE is published. All other datatypes are published at the level 31-334000. Only a ratio at the 31-334000 level was calculated. It was applied to AE at the 31-334000 level, as well as all the non-AE data types, and that same amount of AE was taken out of 31-334100.

The ratio was applied to the March 2024 CES AE, PE, and WE estimates for computer and electronic product manufacturing to determine the amount of employment to wedge from March 2024 for the history of the series back to 2005, or 231 months. The amount of employment moving out of computer and electronic product manufacturing in March 2024 was spread back across those 231 months linearly; $1/231$ of the March difference is subtracted from the January 2005 estimate, $2/231$ from the February 2005 estimate, and so on, until the full amount is subtracted from the March 2024 estimate. These employment amounts were then added to the employment of corporate, subsidiary, and regional managing offices to get the new totals.

Average hours and average earnings for corporate, subsidiary, and regional managing offices was affected back to 2005. The amount of total hours to move into corporate, subsidiary, and regional managing offices was calculated by multiplying the amount of employment moving out of computer and electronic product manufacturing by the AWH for that industry. Total earnings to move out of computer and electronic product manufacturing was calculated by multiplying the total hours moving to corporate, subsidiary, and regional managing offices by AHE for computer and electronic product manufacturing. These formulas apply to both AE and PE hours and

earnings. The parts of total hours and total earnings moved were summed with the original total hours and total earnings for corporate, subsidiary, and regional managing offices. Those new total hours and total earnings were then averaged using the new employment levels for corporate, subsidiary, and regional managing offices. The AWH and AHE for corporate, subsidiary, and regional managing offices, therefore, did change due to the reconstruction. More information about the calculation of CES employment, hours, and earnings estimates is available in the Handbook of Methods under [Monthly Estimation](#).

Aggregate-level reconstruction effects

Reconstructed basic series from the computer and electronic product manufacturing and corporate, subsidiary, and regional managing offices reconstruction were summed to aggregate levels using the normal CES aggregation methods (see the [Aggregation procedures](#) section in the CES Handbook of Methods), and, consequently, unadjusted aggregate employment series are subject to change from the detailed aggregate series to summary level aggregates within each of the major industry sectors. Additionally, the reconstruction affected major industry sector level employment for manufacturing, durable goods, and professional and business services. Employment, hours, and earnings series are subject to change from summary levels to major industry sector levels for private service-providing, service-providing, goods-producing, total private, and total nonfarm. Average weekly overtime hours in manufacturing industries and their aggregates are also subject to change. Differences for not seasonally adjusted employment for manufacturing, durable goods, and professional and business services are minor, ranging from -2,000 to 3,000.

Historical reconstructions

The following reconstructions to the historical CES series did not affect the benchmark.

General medical and surgical hospitals reconstruction

With the 2010 benchmark, a large amount of employment was reclassified and moved out of general medical and surgical hospitals (65-622100) and into HMO medical centers (65-621491). The reclassification was not addressed at the time, leading to a break in the time series for these industries from April 2009 to March 2010. Addressing the break involved moving employment, hours, and earnings from 65-622100 and its summary level 65-622000 into 65-621491 and its summary levels 65-621490, 65-621400, and 65-621000.

Once the un-benchmarked data was reconstructed, April 2009 to March 2010 was wedged to the benchmark 2010 levels. This brought the entire reconstructed series in line with the already benchmarked series from March 2010 to March 2024.

The detailed industries and their summary series go back to 1990 for most industries and data types. For AE-AWH and AE-AHE, data go back to 2006. For 65-622100, AE goes back to 1958; WE goes back to 1960; and PE, PE AWH, and PE AHE go back to 1968. Each industry was reconstructed from the beginning of its history to March 2010, when the break occurred.

Subsequent reconstruction to HMO medical centers during the 2016 benchmark

During the 2016 benchmark, it was found that a portion of employment in 65-621111 should have been in 65-621491. The 2010 reconstruction was constructed using data that predated the 2016 reconstruction. Therefore, after the 2010 reconstruction was complete, a second reconstruction using the amounts moved into 65-621491 from 1990 to 2010 was required to fully adjust the series. The same amounts were applied to its aggregate series, including 65-621490 and 65-621400, but not including 65-621000 because that level of aggregation was unaffected by the 2016 reconstruction.

Reconstruction methods

A part of the CES industry 65-622100 was redistributed into 65-621491 and its summary levels: 65-621000, 65-621400, and 65-6214900.

A ratio of employment moving out of general medical and surgical hospitals amounting to 0.7 percent was calculated from QCEW data for March 2010. That ratio was applied to the un-benchmarked history of 65-622100 from March 2010 back to the beginning of its history. The ratio was applied to AE, PE, and WE, as well as total hours and total earnings for AE and PE to determine the amounts to move into 65-621491 for AE and 65-6214900 for all other data types.

To align the reconstructed series with the currently published data, AE was wedged from April 2009 to March 2010 using March 2010 population numbers. The wedge amount is the difference between the reconstructed March 2010 value and the March 2010 benchmark level. This difference was wedged back to April 2009. Other data types were adjusted for the wedge of AE data in accordance with normal benchmarking procedures.

Once the wedge process was complete, amounts for the 2016 reconstruction were added to the reconstructed and wedged series for 65-621491, 65-621490, and 65-621400 from January 1990 to March 2010. Neither 65-622100 nor 65-622000 were affected by the 2016 reconstruction.

Finally, the reconstructed, wedged, and 2016 reconstructed data were appended to the current data from March 2010 to March 2024, resulting in final continuous series for all data types for these industries.

Electric power generation reconstruction

With the 2010 benchmark, a large amount of employment was reclassified and moved out of fossil fuel electric power generation (44-221112) and hydroelectric and nuclear, solar, wind, geothermal, biomass, and other electric power generation (44-22111800) and into electric power distribution (44-221122). At the same time, some employment was moved between 44-221112 and 44-221118. The reclassification was not addressed at the time, leading to a break in all three industries from April 2009 to March 2010. The correction involved moving employment, hours, and earnings from 44-221112 into 44-221118 and 44-221122 and from 44-221118 into 44-221112 and 44-221122. No employment, hours, or earnings were moved out of 44-221122.

Once the un-benchmarked data was reconstructed, April 2009 to March 2010 was wedged to the benchmark 2010 levels. This brought the entire reconstructed series in line with the already post-benchmarked series from March 2010 to March 2024.

The detailed industries and their summary series go back to 1990 for most data types. For AE-AWH and AE-AHE, data go back to 2006. Each industry was reconstructed from the beginning of its history to March 2010, when the break occurred.

Important NAICS update since 2010

In the 2012 NAICS conversion, NAICS 221119 became 221118. Along with the new 221118, NAICS 221111 makes up the current CES industry 44-221118. For simplicity, the CES industry code 44-221118 will be used to mean the group of NAICS 221111 and 221119 from the 2010 QCEW data.

Reconstruction methods

Part of 44-221112 in the electric power generation industry was redistributed into 44-221118 and 44221122. Also, part of 44-221118 was redistributed into 44-221112 and 44-22112200.

Two ratios of employment moving out of 44-221112 were calculated from QCEW data for March 2010, amounting to 2.2 percent moving to 44-221118 and 31.8 percent moving to 44-221122. Also, two ratios of employment moving out of 44-221118 were calculated from QCEW data for March 2010, amounting to 10.9 percent moving to 44-221112 and 27 percent moving to 44-221122.

These ratios were applied to each industry from March 2010 back to January 1990 for AE, PE, WE, PE total hours, and PE total earnings series and back to April 2006 for AE total hours and AE total earnings series. The ratios were applied to the basic level industries 44-221112 and 44-221118 for all data types. For 44-221118, non-AE data types were backed out of the aggregate industry 44-221110 for non-AE series by subtracting the 44-221112 non-AE series. Ratios could then be applied at the 44-221118 level for all data types. Ratios were applied directly to 44-221112 and 44-221118 for all months from March 2010 back to the beginning of each series.

To align the reconstructed series with the currently published data, AE was wedged from April 2009 to March 2010 using March 2010 population numbers. The wedge amount is the difference between the reconstructed March 2010 value and the March 2010 benchmark level. This difference was wedged back to April 2009. Other data types were adjusted for the wedge of AE data in accordance with normal benchmarking procedures.

Finally, the reconstructed and wedged data were appended to the current data from March 2010 to March 2024, resulting in final continuous series for all data types for these industries.

Changes to the CES published series

With the release of the January 2025 first preliminary estimates on February 7, 2025, BLS incorporated series changes related to annual sample adequacy and disclosure review.

All CES series are evaluated annually for sample size, coverage, and response rates. The following changes result from a re-evaluation of the sample and universe coverage for CES industries, which are based on NAICS 2022. Some industries no longer have sufficient sample to be estimated and published separately and were discontinued or combined with other similar industries for estimation and publication purposes. This information is also available on the [Notice of Publication Changes](#) webpage.

In addition to the annual sample review, CES series are sometimes reconstructed to avoid series breaks and to provide users with comparable time series suitable for economic analysis. Reconstructed basic series are summed to aggregate levels using the normal CES aggregation methods (see the [Aggregation procedures](#) section in the CES Handbook of Methods), and, consequently, unadjusted aggregate employment series are subject to change from the detailed aggregate series to summary level aggregates within each the major industry sector. Hours and earnings series are subject to change from summary levels to major industry sector levels. Aggregate industries as well as component series used in indirect seasonal adjustment are also subject to change.

A list of currently published CES series is available on the [CES Published Series](#) webpage.

Table 11. Series with CES industry code or title changes

NAICS Code	Previous		New	
	CES Industry Code	CES Industry Title	CES Industry Code	CES Industry Title
334412,8	31-334412	Bare printed circuit board manufacturing	31-334418	Bare printed circuit board and printed electronic circuit assembly manufacturing
334412,8	31-334418	Printed electronic circuit assembly manufacturing		
33592,3,9	31-335930	Wiring device manufacturing	31-335990	Wiring device, communication and energy wire and cable, and all other electrical equipment and component manufacturing
33592,3,9	31-335990	Communication and energy wire and cable and all other electrical equipment and component manufacturing		
33633,4,6,9	31-336330	Motor vehicle steering and suspension components, except spring, manufacturing	31-336390	Motor vehicle steering and suspension components, except spring; brake system, seating, interior

NAICS Code	Previous		New	
	CES Industry Code	CES Industry Title	CES Industry Code	CES Industry Title
33633,4,6,9	31-336390	Motor vehicle brake system, seating, interior trim, and other motor vehicle parts manufacturing		trim, and other motor vehicle parts manufacturing
323111,17,20	32-323117	Commercial and book printing (except screen)	32-323117	Commercial and book printing (except screen) and support activities for printing
56145,9	60-561490	Credit bureaus and other business support services	60-561490	Repossession, court reporting, stenotype, and other business support services and credit bureaus

[To Table of Figures](#)

To identify affected series more easily and because AE series are published at a more detailed industry level than non-AE series, series changes are shown separately for AE and non-AE data types. The first three tables in this section reference discontinued, collapsed, and new series for AE only. The fourth table references discontinued series for all non-AE data types. Discontinued series tables ([table 12](#) and [table 15](#)) display series for which the data types noted are no longer published. The collapsed series table ([table 13](#)) displays series for which the data types noted are published at a more aggregate level because the more detailed 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. The new series table ([table 14](#)) shows series that are newly published for AE after passing tests for adequate sample and confidentiality of reported data. Historical data for the collapsed and newly published series were reconstructed to provide consistent time series. Industries that are no longer published for AE will also no longer be published for other directly estimated data types or derivative series. Industries with newly published AE will be evaluated to determine if non-AE data for those industries is also publishable. If so, non-AE data for those industries will be released with the next benchmark.

Table 12. Discontinued AE series

NAICS Code	CES Industry Code	CES Industry Title	Next Highest Published Industry
332912	31-332912	Fluid power valve and hose fitting manufacturing	Metal valve manufacturing (31- 332910)
332911,3,9	31-332919	Industrial valve, plumbing fixture fitting and trim, and other metal valve and pipe fitting manufacturing	Metal valve manufacturing (31- 332910)
31121,2	32-311220	Flour milling, malt, starch, and vegetable fats and oils manufacturing	Grain and oilseed milling (32- 311200)
31123	32-311230	Breakfast cereal manufacturing	Grain and oilseed milling (32- 311200)
31491	32-314910	Textile bag and canvas mills	Other textile product mills (32- 314900)
31499	32-314990	All other textile product mills	Other textile product mills (32- 314900)
455211	42-455211	Warehouse clubs and supercenters	Warehouse clubs, supercenters, and other general merchandise retailers (42-455200)
455219	42-455219	All other general merchandise retailers	Warehouse clubs, supercenters, and other general merchandise retailers (42-455200)

[To Table of Figures](#)

Table 13. Collapsed AE series

Previous			New		
NAICS Code	CES Industry Code	CES Industry Title	NAICS Code	CES Industry Code	CES Industry Title
334412	31-334412	Bare printed circuit board manufacturing	334412,8	31-334418	Bare printed circuit board and printed electronic circuit assembly manufacturing
334418	31-334418	Printed electronic circuit assembly manufacturing			
33593	31-335930	Wiring device manufacturing	33592,3,9	31-335990	Wiring device, communication and energy wire and cable, and all other electrical equipment and component manufacturing
33592,9	31-335990	Communication and energy wire and cable and all other electrical equipment and component manufacturing			
33633	31-336330	Motor vehicle steering and suspension components, except spring, manufacturing	33633,4,6,9	31-336390	Motor vehicle steering and suspension components, except spring; brake system, seating, interior trim, and other motor vehicle parts manufacturing
33634,6,9	31-336390	Motor vehicle brake system, seating, interior trim, and other motor vehicle parts manufacturing			

[To Table of Figures](#)

Table 14. New AE series

NAICS Code	CES Industry Code	CES Industry Title
21222	10-212220	Gold ore and silver ore mining
21221,3,9	10-212290	Iron ore, copper, nickel, lead, zinc, and other metal ore mining
213111	10-213111	Drilling oil and gas wells
213113,4,5	10-213115	Support activities for coal, metal, and nonmetallic minerals mining
334111	31-334111	Electronic computer manufacturing
334112,8	31-334118	Computer storage device, terminal, and other peripheral equipment manufacturing
323113	32-323113	Commercial screen printing
323111,17,20	32-323117	Commercial and book printing (except screen) and support activities for printing
42431,4	41-424340	Footwear, piece goods, notions, and other dry goods merchant wholesalers
42442	41-424420	Packaged frozen food merchant wholesalers
42445	41-424450	Confectionery merchant wholesalers
42443,4,6,7	41-424470	Dairy product (except dried or canned), poultry product, fish, seafood, meat, and meat product merchant wholesalers
42449	41-424490	Other grocery and related products merchant wholesalers
445291,2	42-445292	Baked goods, confectionery, and nut retailers
445298	42-445298	All other specialty food retailers
561499	60-561499	All other business support services
562111	60-562111	Solid waste collection
562112,9	60-562119	Hazardous and other waste collection

NAICS Code	CES Industry Code	CES Industry Title
611512	65- 611512	Private flight training
611511,3	65- 611513	Private cosmetology and barber schools and apprenticeship training
611519	65- 611519	Other private technical and trade schools
611691	65- 611691	Private exam preparation and tutoring
611699	65- 611699	Private miscellaneous schools and instruction

[To Table of Figures](#)

Table 15. Discontinued non-AE series

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry
2121	10-212100	Coal mining	AE AWH, AE AHE	Mining (except oil and gas) (10-212000)
2122	10-212200	Metal ore mining	AE AWH, AE AHE	Mining (except oil and gas) (10-212000)
23817	20-238170	Siding contractors	AE AWH, AE AHE	Foundation, structure, and building exterior contractors (20-238100)
23819	20-238190	Other foundation, structure, and building exterior contractors	AE AWH, AE AHE	Foundation, structure, and building exterior contractors (20-238100)
23833	20-238330	Flooring contractors	PE, PE AWH, PE AHE	Building finishing contractors (20-238300)
32191	31-321910	Millwork	PE AWOH	Wood product manufacturing (31-321000)
32192	31-321920	Wood container and pallet manufacturing	AE AWOH	Other wood product manufacturing (31-321900)
32199	31-321990	All other wood product manufacturing	AE AWOH	Other wood product manufacturing (31-321900)
3272	31-327200	Glass and glass product manufacturing	WE	Nonmetallic mineral product manufacturing (31-327000)
32732	31-327320	Ready-mix concrete manufacturing	PE, PE AWH, PE AHE, AE AWOH, PE AWOH	Cement and concrete product manufacturing (31-327300)
32731,3,9	31-327390	Cement and concrete pipe, brick, block, and other concrete product manufacturing	PE, PE AWH, PE AHE, AE AWOH, PE AWOH	Cement and concrete product manufacturing (31-327300)
3274,9	31-327900	Lime, gypsum, and other nonmetallic mineral product manufacturing	AE AWOH	Nonmetallic mineral product manufacturing (31-327000)
33271	31-332710	Machine shops	PE, PE AWH, PE AHE, AE AWOH	Machine shops; turned product; and screw, nut, and bolt manufacturing (31-332700)

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry
33272	31-332720	Turned product and screw, nut, and bolt manufacturing	PE, PE AWH, PE AHE, AE AWOH	Machine shops; turned product; and screw, nut, and bolt manufacturing (31-332700)
332811,2	31-332812	Metal heat treating, coating, engraving (except jewelry and silverware), and allied services to manufacturers	AE AWOH	Coating, engraving, heat treating, and allied activities (31-332800)
332813	31-332813	Electroplating, plating, polishing, anodizing, and coloring	AE AWOH	Coating, engraving, heat treating, and allied activities (31-332800)
33291	31-332910	Metal valve manufacturing	AE AWH, AE AHE	Cutlery, handtool, and other fabricated metal product manufacturing (31-332900)
33299	31-332990	Cutlery, handtool, and all other fabricated metal product manufacturing	AE AWH, AE AHE	Cutlery, handtool, and other fabricated metal product manufacturing (31-332900)
333248	31-333248	All other industrial machinery manufacturing	PE AWOH	Industrial machinery manufacturing (31-333200)
3353	31-335300	Electrical equipment manufacturing	PE AWOH	Electrical equipment, appliance, and component manufacturing (31-335000)
3359	31-335900	Other electrical equipment and component manufacturing	PE AWOH	Electrical equipment, appliance, and component manufacturing (31-335000)
3362	31-336200	Motor vehicle body and trailer manufacturing	PE, PE AWH, PE AHE, PE AWOH	Transportation equipment manufacturing (31-336000)
336411	31-336411	Aircraft manufacturing	PE, PE AWH, PE AHE	Aerospace product and parts manufacturing (31-336400)
33995	31-339950	Sign manufacturing	PE AWOH	Other miscellaneous manufacturing (31-339900)
313	32-313000	Textile mills	PE, PE AWH, PE AHE	Nondurable goods (32-000000)

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry
314	32-314000	Textile product mills	PE AWOH	Nondurable goods (32-000000)
315	32-315000	Apparel manufacturing	PE, PE AWH, PE AHE	Nondurable goods (32-000000)
32221	32-322210	Paperboard container manufacturing	PE, PE AWH, PE AHE	Paper manufacturing (32-322000)
3261	32-326100	Plastics product manufacturing	AE AWH, AE AHE, PE, PE AWH, PE AHE, AE AWOH	Plastics and rubber products manufacturing (32-326000)
3262	32-326200	Rubber product manufacturing	AE AWH, AE AHE, PE, PE AWH, PE AHE, AE AWOH	Plastics and rubber products manufacturing (32-326000)
42435	41-424350	Clothing and clothing accessories merchant wholesalers	PE, PE AWH, PE AHE	Apparel, piece goods, and notions merchant wholesalers (41-424300)
42448	41-424480	Fresh fruit and vegetable merchant wholesalers	PE, PE AWH, PE AHE	Grocery and related product merchant wholesalers (41-424400)
42493	41-424930	Flower, nursery stock, and florists' supplies merchant wholesalers	AE AWH, AE AHE	Miscellaneous nondurable goods merchant wholesalers (41-424900)
44423	42-444230	Outdoor power equipment retailers	AE AWH, AE AHE	Lawn and garden equipment and supplies retailers (42-444200)
44424	42-444240	Nursery, garden center, and farm supply retailers	AE AWH, AE AHE	Lawn and garden equipment and supplies retailers (42-444200)
445131	42-445131	Convenience retailers	WE	Convenience retailers and vending machine operators (42-445130)
445132	42-445132	Vending machine operators	WE	Convenience retailers and vending machine operators (42-445130)
44524,5	42-445250	Meat, fish, and seafood retailers	PE, PE AWH, PE AHE	Specialty food retailers (42-445200)
4571	42-457100	Gasoline stations	PE, PE AWH, PE AHE	Gasoline stations and fuel dealers (42-457000)

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry
45711	42- 457110	Gasoline stations with convenience stores	PE, PE AWH, PE AHE	Gasoline stations and fuel dealers (42-457000)
45712	42- 457120	Other gasoline stations	PE, PE AWH, PE AHE	Gasoline stations and fuel dealers (42-457000)
4572	42- 457200	Fuel dealers	PE, PE AWH, PE AHE	Gasoline stations and fuel dealers (42-457000)
4582	42- 458200	Shoe retailers	PE, PE AWH, PE AHE	Clothing, clothing accessories, shoe, and jewelry retailers (42- 458000)
4583	42- 458300	Jewelry, luggage, and leather goods retailers	PE, PE AWH, PE AHE	Clothing, clothing accessories, shoe, and jewelry retailers (42- 458000)
4592	42- 459200	Book retailers and news dealers	PE, PE AWH, PE AHE	Sporting goods, hobby, musical instrument, book, and miscellaneous retailers (42- 459000)
4593	42- 459300	Florists	PE, PE AWH, PE AHE	Sporting goods, hobby, musical instrument, book, and miscellaneous retailers (42- 459000)
45991	42- 459910	Pet and pet supplies retailers	PE, PE AWH, PE AHE	Other miscellaneous retailers (42-459900)
48421	43- 484210	Used household and office goods moving	PE, PE AWH, PE AHE	Specialized freight trucking (43-484200)
48423	43- 484230	Specialized freight (except used goods) trucking, long- distance	PE, PE AWH, PE AHE	Specialized freight trucking (43-484200)
2212	44- 221200	Natural gas distribution	PE, PE AWH, PE AHE	Utilities (44-220000)
2213	44- 221300	Water, sewage, and other systems	PE, PE AWH, PE AHE	Utilities (44-220000)
51711	50- 517110	Wired and wireless telecommunications carriers (except satellite)	PE, PE AWH, PE AHE	Wired and wireless telecommunications (except satellite) (50-517100)
517111	50- 517111	Wired telecommunications carriers	PE, PE AWH, PE AHE	Wired and wireless telecommunications (except satellite) (50-517100)

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry
517112	50-517112	Wireless telecommunications carriers (except satellite)	PE, PE AWH, PE AHE	Wired and wireless telecommunications (except satellite) (50-517100)
51712	50-517120	Telecommunications resellers	PE, PE AWH, PE AHE	Wired and wireless telecommunications (except satellite) (50-517100)
52411	55-524110	Direct life, health, and medical insurance carriers	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Insurance carriers (55-524100)
52413	55-524130	Reinsurance carriers	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Insurance carriers (55-524100)
5322	55-532200	Consumer goods rental	WE	Rental and leasing services (55-532000)
532283	55-532283	Home health equipment rental	AE AWH, AE AHE, PE, PE AWH, PE AHE, WE	Rental and leasing services (55-532000)
5323	55-532300	General rental centers	WE	Rental and leasing services (55-532000)
54192	60-541920	Photographic services	AE AWH, AE AHE	Other professional, scientific, and technical services (60-541900)
54193,9	60-541990	Translation, interpretation, and all other professional, scientific, and technical services	AE AWH, AE AHE	Other professional, scientific, and technical services (60-541900)
56143	60-561430	Business service centers	PE, PE AWH, PE AHE	Business support services (60-561400)
6222	65-622200	Psychiatric and substance abuse hospitals	WE	Hospitals (65-622000)
6223	65-622300	Specialty, except psychiatric and substance abuse, hospitals	WE	Hospitals (65-622000)

NAICS Code	CES Industry Code	CES Industry Title	Discontinued From Publication	Next Highest Published Industry
7113,4	70-711300	Arts and sports promoters and agents and managers for public figures	PE, PE AWH, PE AHE	Performing arts, spectator sports, and related industries (70-711000)
7115	70-711500	Independent artists, writers, and performers	PE, PE AWH, PE AHE	Performing arts, spectator sports, and related industries (70-711000)
722514	70-722514	Cafeterias, grill buffets, and buffets	PE, PE AWH, PE AHE	Restaurants and other eating places (70-722500)
722515	70-722515	Snack and nonalcoholic beverage bars	PE, PE AWH, PE AHE	Restaurants and other eating places (70-722500)
811111	80-811111	General automotive repair	PE, PE AWH, PE AHE	Automotive mechanical and electrical repair and maintenance (80-811110)
811114	80-811114	Specialized automotive repair	PE, PE AWH, PE AHE	Automotive mechanical and electrical repair and maintenance (80-811110)
8112	80-811200	Electronic and precision equipment repair and maintenance	PE, PE AWH, PE AHE	Repair and maintenance (80-811000)
8114	80-811400	Personal and household goods repair and maintenance	PE, PE AWH, PE AHE	Repair and maintenance (80-811000)

[To Table of Figures](#)

Availability of revised data

LABSTAT, the BLS public database, 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 from the [CES National Databases](#) webpage.

Previously published data are available on both a not seasonally adjusted and seasonally adjusted basis for all CES industries down to the 3-digit level from the [CES Vintage Data Information](#) webpage. CES vintage data are typically updated in early March following the annual benchmark revision.

Benchmarks for detailed industries can be found at the [CES detailed industry tables](#) webpage.

Table of figures

Table 1. Differences in seasonally adjusted levels and over-the-month changes, total nonfarm employment, January to December 2024 (in thousands)	3
Table 2. Seasonally adjusted employment revisions for major industry sectors, March 2024 (in thousands)	5
Table 3. Not seasonally adjusted employment benchmarks for major industry sectors, March 2024 (in thousands).....	6
Table 4. Percent and level differences between nonfarm employment benchmarks and estimates by industry supersector, March 2014 to 2024 (in thousands)	8
Table 5. Directly estimated data types	10
Table 6. Effect of March 2024 benchmark revisions to all employees average weekly hours and average hourly earnings estimates, major industry sectors	12
Table 7. Effect of March 2024 benchmark revisions to production and nonsupervisory employee average weekly hours and average hourly earnings estimates, major industry sectors	13
Table 8. Differences between forecasted and actual net birth-death, total private employment, April 2023 to March 2024 (in thousands)	15
Table 9. Net birth-death forecasts by industry supersector, April to December 2024 (in thousands).....	16
Table 10. Comparison of cumulative preliminary, usual post-benchmark, and modified post-benchmark net birth-death forecasts for April to October of 2024 (in thousands)	17
Table 11. Series with CES industry code or title changes	22
Table 12. Discontinued AE series	24
Table 13. Collapsed AE series.....	25
Table 14. New AE series	26
Table 15. Discontinued non-AE series	28

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