

Employment expansion continued in 2019, but growth slowed in several industries

Nonfarm employment continued the largest job recovery and expansion in U.S. history in 2019. Although the annual gain was smaller than the year before, private education and health services and leisure and hospitality exhibited accelerations in job growth. Alternatively, employment growth decelerated in construction, manufacturing, and transportation and warehousing. Average hourly earnings rose over the year while average weekly hours declined, leading to little change in average weekly earnings.

In 2019, total nonfarm payroll employment expanded by 2.1 million, or 1.4 percent, continuing the longest job recovery and expansion in the history of the employment series from the Current Employment Statistics survey. (See figure 1.) The average monthly job gains of 178,000 in 2019 slowed slightly from the previous year (+193,000). In percentage terms, 2019 experienced the weakest calendar-year job gain (+1.4 percent) since 2010, when nonfarm employment grew by 0.8 percent. The deceleration in employment growth in 2019 coincided with a deceleration in the growth of real gross domestic product,^[1] which slowed from 2.9 percent in 2018 to 2.3 in 2019. (See table 1.)



Michael D. McCall

mcCall.michael@bls.gov

Michael D. McCall is an economist in the Office of Employment and Unemployment Statistics, U.S. Bureau of Labor Statistics.

Figure 1. Over-the-month change in total nonfarm employment, seasonally adjusted, in thousands, January 2016 to December 2019

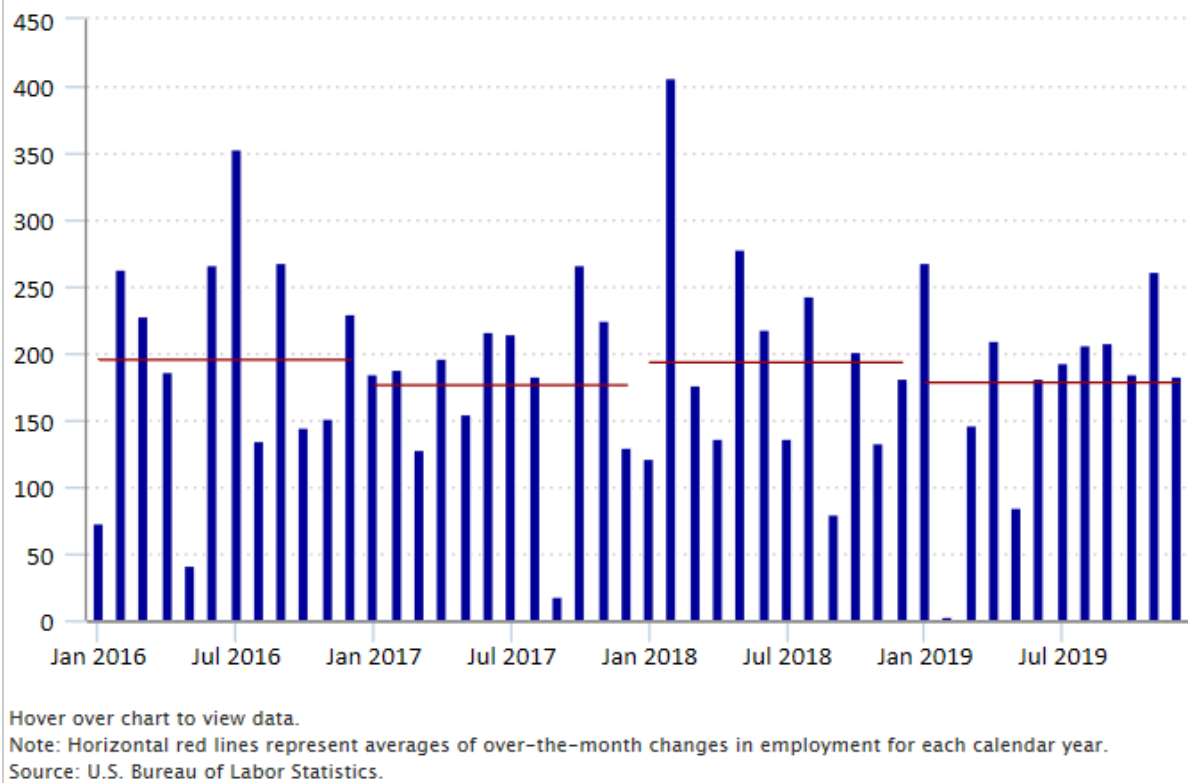


Table 1. Percent changes in employment and real gross domestic product, 2010–19

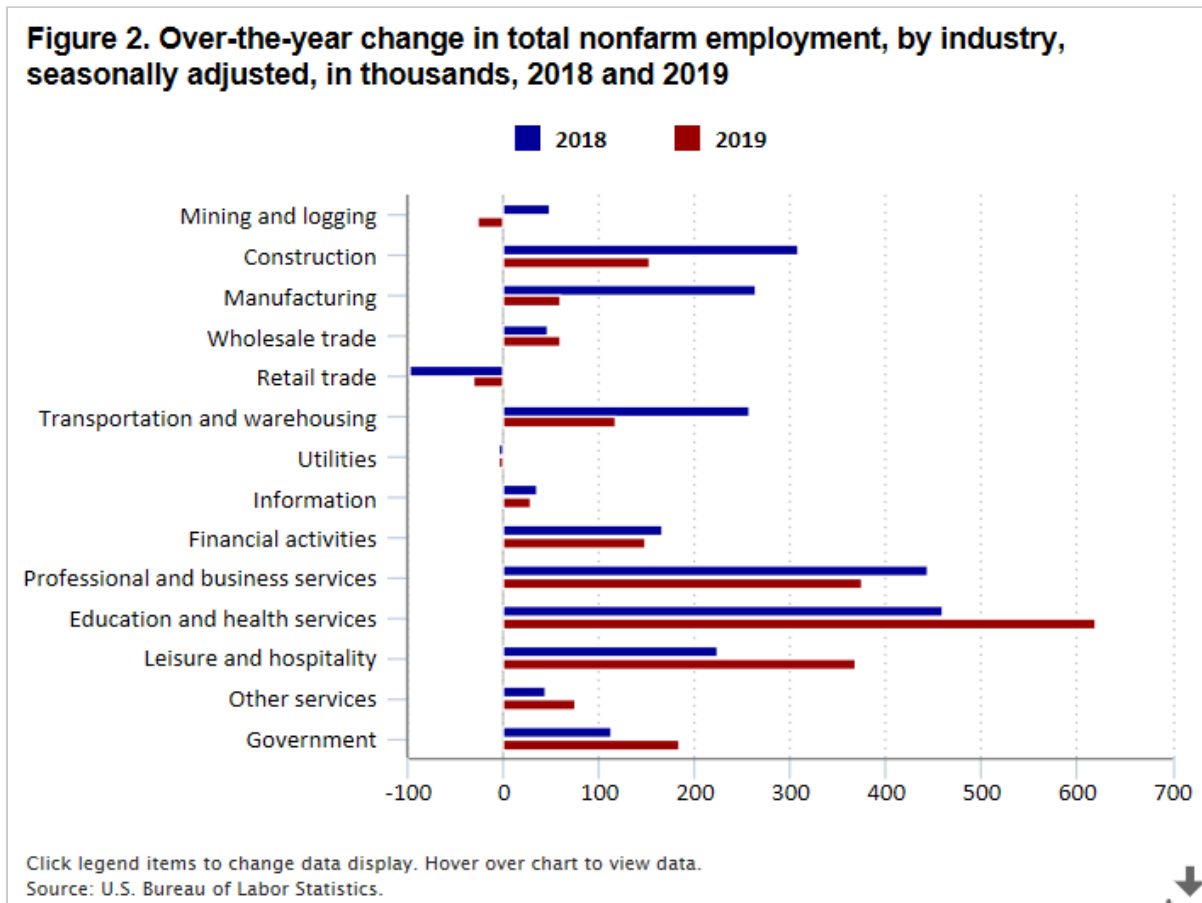
Year	Employment	Gross domestic product
2010	0.8	2.6
2011	1.6	1.6
2012	1.6	2.2
2013	1.7	1.8
2014	2.2	2.5
2015	1.9	2.9
2016	1.6	1.6
2017	1.5	2.4
2018	1.6	2.9
2019	1.4	2.3

Note: Employment change is based on the December-to-December change in seasonally adjusted data.

Sources: U.S. Bureau of Labor Statistics and Bureau of Economic Analysis.

In 2019, employment growth accelerated in private education and health services and leisure and hospitality. (See figure 2.) Government and other services also experienced improved job gains. In contrast, employment gains were markedly weaker in transportation and warehousing and in goods-producing industries. Both construction and manufacturing showed decelerations in job growth, and employment in mining and logging transitioned from a

gain in 2018 to a loss in 2019. Professional and business services added slightly fewer jobs over the year than it had gained in 2018, while retail trade employment was essentially unchanged, after declining in 2018.



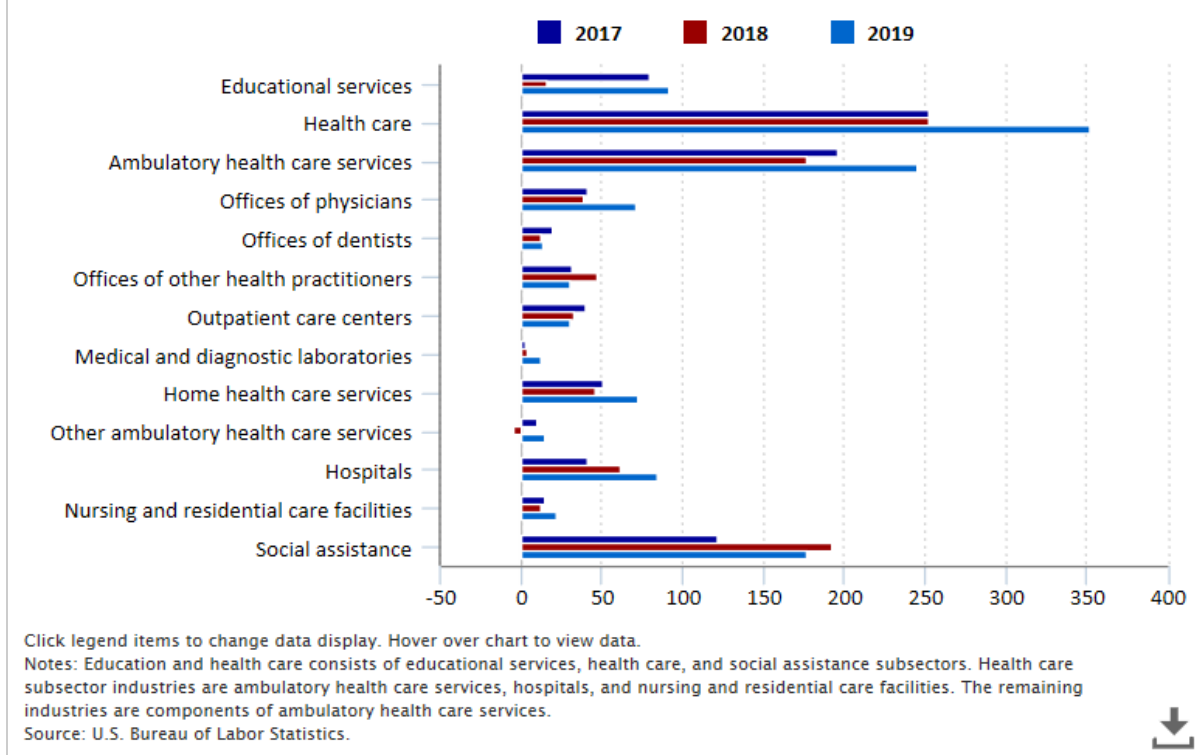
Job growth acceleration

Employment growth in some industry sectors accelerated in 2019. This section discusses four sectors in which employment growth outpaced 2018 gains.

Education and health services

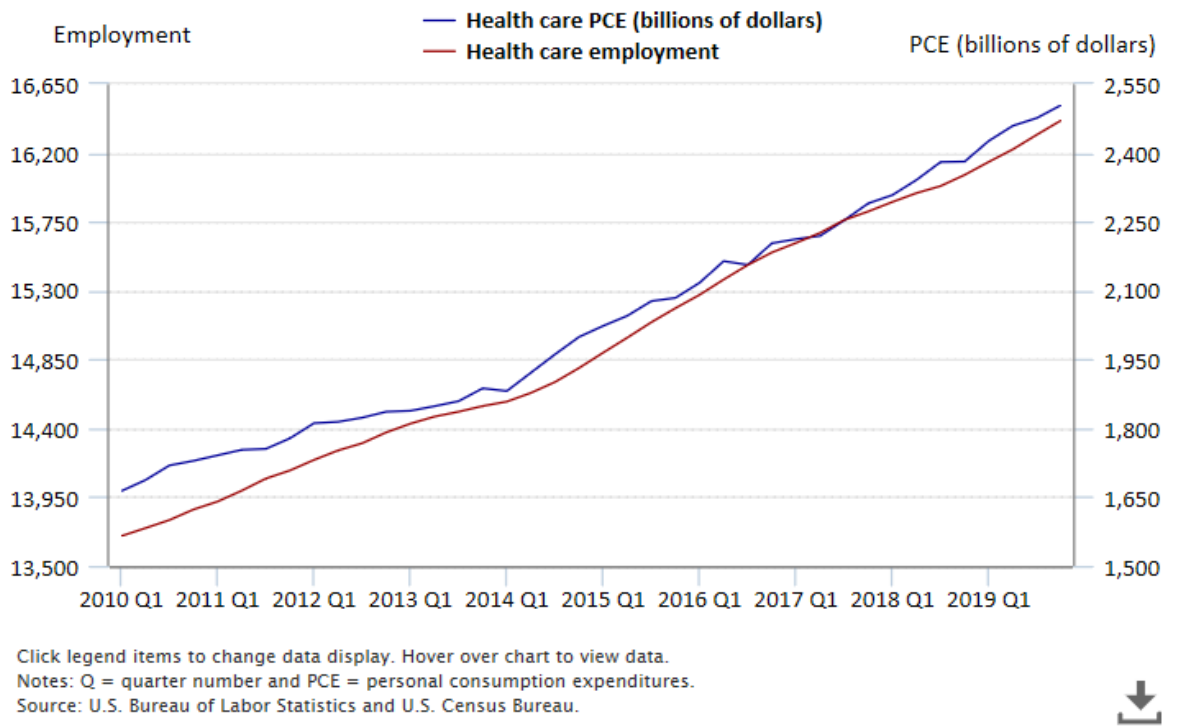
Employment gains in education and health services continued to accelerate in 2019, adding 621,000 jobs over the year, 160,000 more than in the previous year.^[2] Acceleration occurred in educational services, offices of physicians, home health care services, and hospitals. (See figure 3.) As a whole, the gain of 352,000 jobs within health care accounted for 16.5 percent of the gain in total nonfarm employment (or nearly 1 in every 6 jobs added) in 2019, up from 10.9 percent the previous year.

Figure 3. Over-the-year employment change in education and health care, by component industry, seasonally adjusted, in thousands, 2017, 2018, and 2019



Health care employment gains in 2019 were consistent with ongoing increases in consumer spending on health care.^[3] Over the last 3 years, health care consumer spending has increased by an average of 4.4 percent annually and had reached an annualized \$2.5 trillion in the fourth quarter 2019. (See figure 4.)

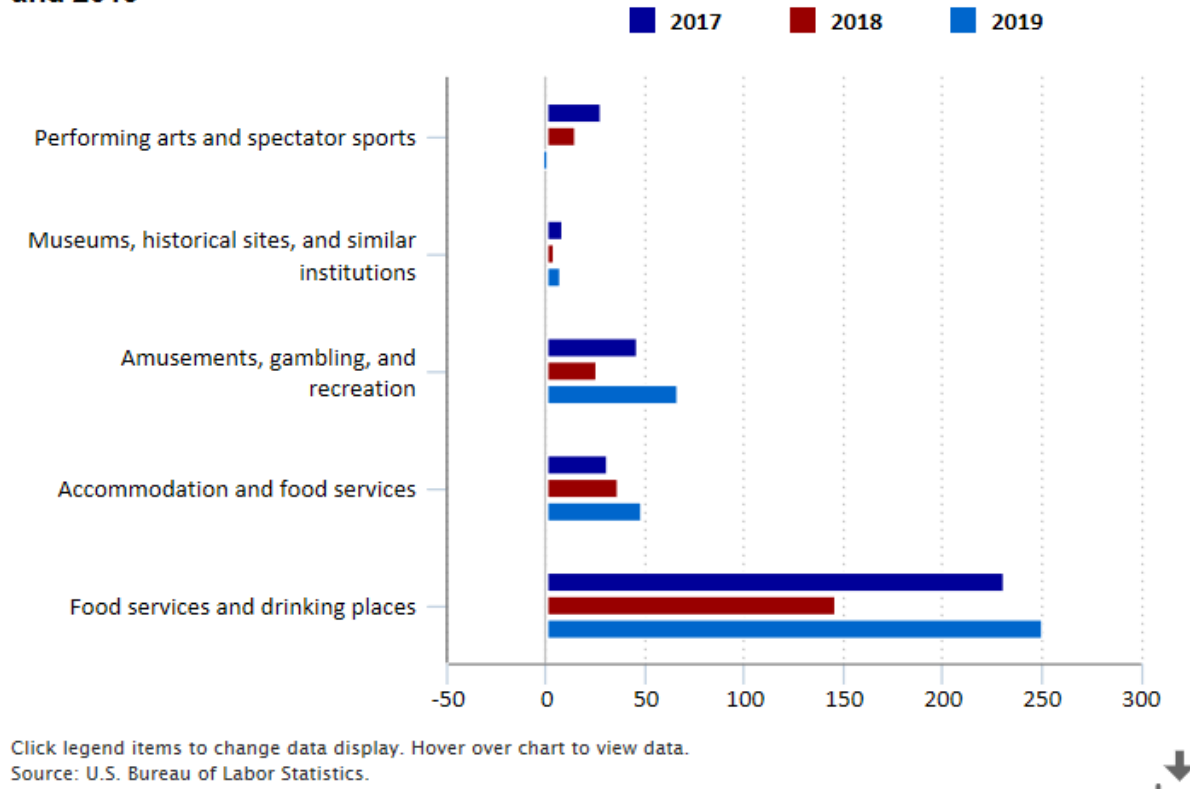
Figure 4. Quarterly averages of employment in health care, seasonally adjusted, in thousands, and of health care personal consumption expenditures, seasonally adjusted annual rate, 2010–19



Leisure and hospitality

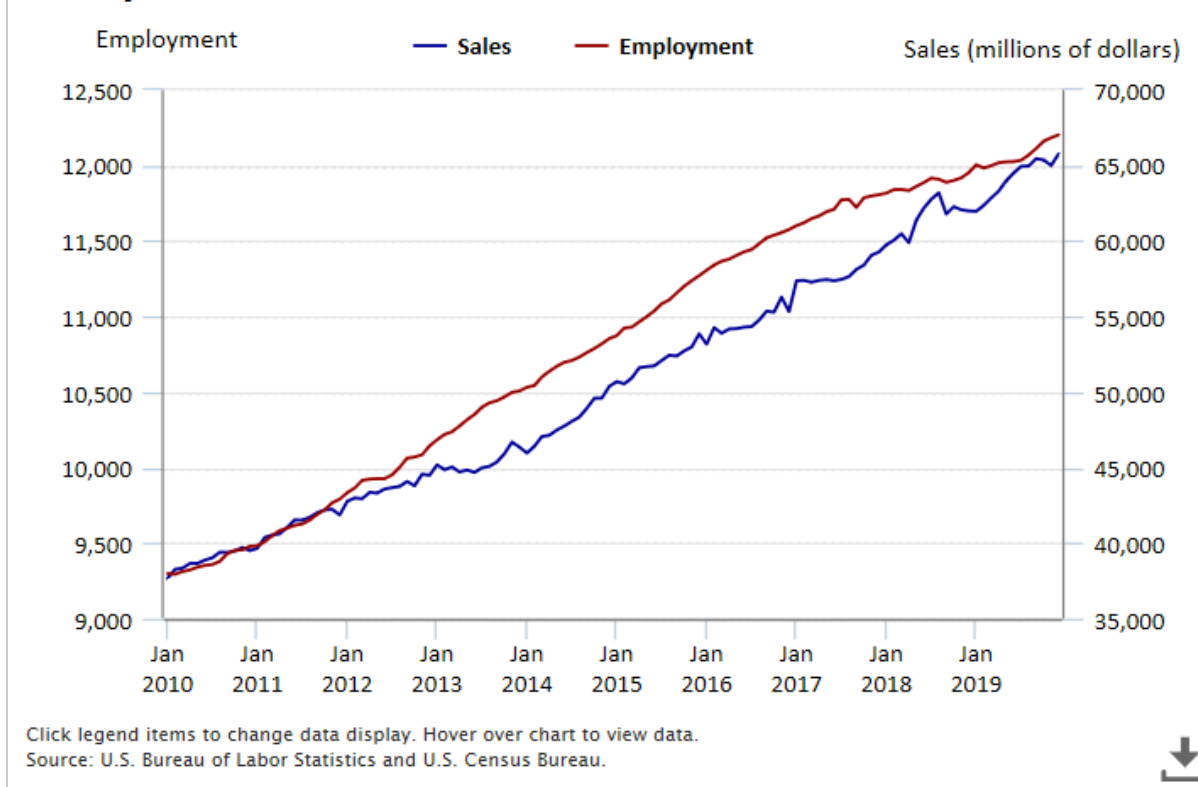
Employment growth in leisure and hospitality accelerated markedly in 2019, adding 144,000 more jobs than in 2018. (See figure 5.) Food services and drinking places (a component making up just under three-quarters of employment in the industry) added 250,000 jobs over the year, an increase over the 146,000 added in 2018. In 2019, 177,000 jobs (or roughly 71 percent) were added in the second half of the year.

Figure 5. Over-the-year employment change in leisure and hospitality, by major component industry, seasonally adjusted, in thousands, 2017, 2018, and 2019



Gains within food services and drinking places have coincided with increases in sales at food services and drinking places establishments,[4] which increased 6.1 percent over the year, unadjusted for inflation. (See figure 6.) In 2019, food services and drinking places accounted for 11.7 percent of all nonfarm jobs added, up from 6.3 percent the previous year.

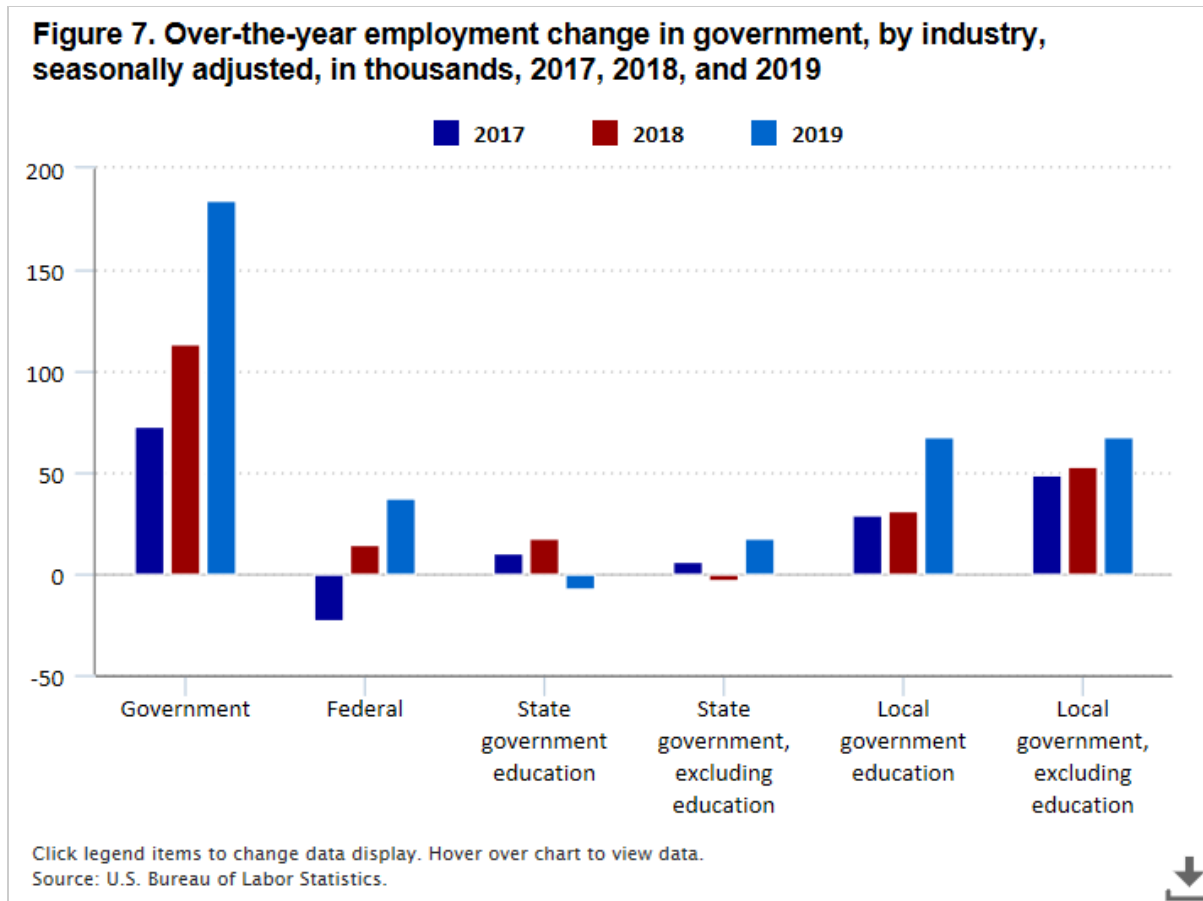
Figure 6. Employment, seasonally adjusted, in thousands, and sales in food services and drinking places, seasonally adjusted, in millions of dollars, January 2010 to December 2019



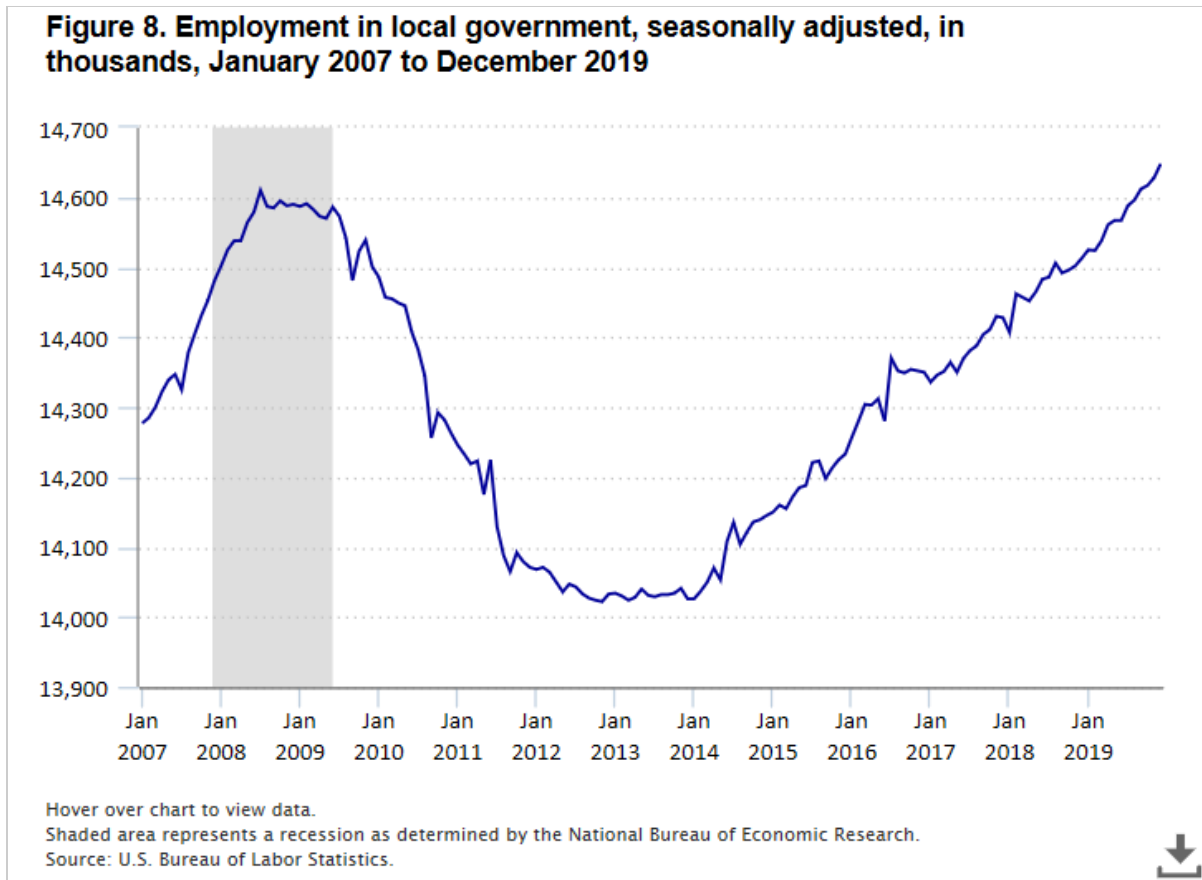
Employment in amusements, gambling, and recreation edged up by 66,000 jobs in 2019, up from little change (+25,000) in the previous year. In 2019, nearly all the gain occurred in the second half of the year. Job gains within amusements, gambling, and recreation in recent years have mirrored consistent gains in consumer spending on recreation services, which reached \$598 billion by the end of 2019, up \$25 billion—or 4.3 percent—from a year earlier.^[5]

Government

Gains in government employment accelerated slightly in 2019, with the sector adding 184,000 jobs versus 114,000 added in 2018. (See figure 7.)



In September 2019, local government employment surpassed its prior all-time high in July 2008. (See figure 8.) The industry led job growth in government, adding 135,000 jobs over the year, split evenly between education and noneducation components. Job gains in both components accelerated in 2019, compared with job gains in 2018.

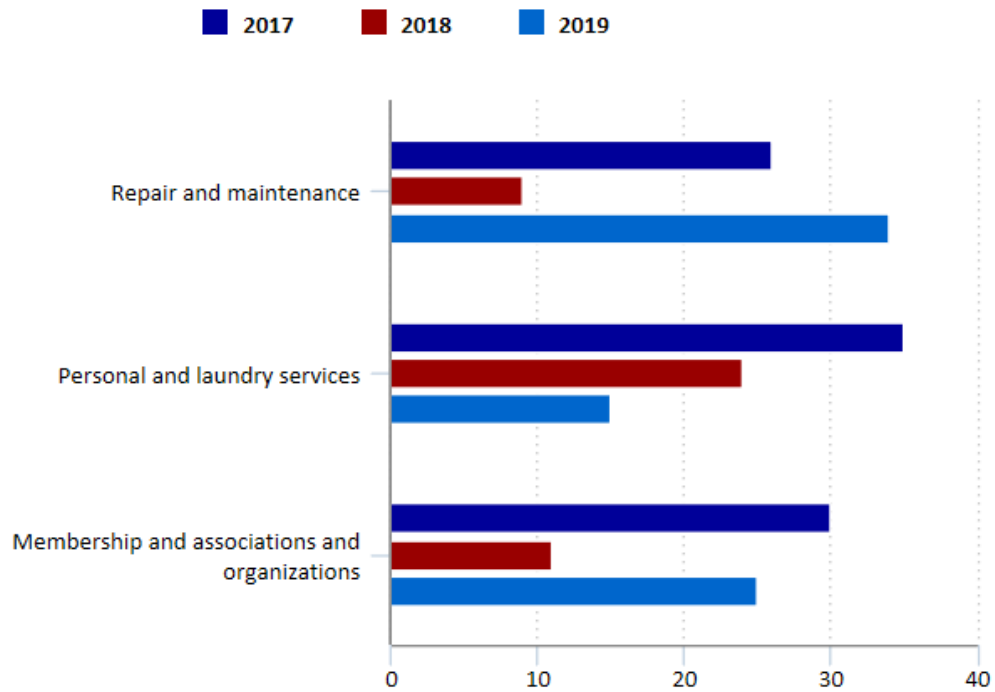


The federal government added 38,000 jobs over the year, 23,000 more added than in 2018. Approximately 27,000 temporary workers for the 2020 Decennial Census were hired through September 2019, primarily for address refinement.^[6] However, most of those workers had concluded their assignments by October and had little effect on the annual employment change within the federal government.

Other services

Employment in other services—a sector comprising an array of industries such as automotive repair, funeral home services, parking lots and garages, and business associations—rose by 75,000 in 2019, slightly more than the 44,000 jobs added in 2018. Among the sector’s component industries, repair and maintenance nearly quadrupled its job gains from a year earlier, adding 34,000 jobs in 2019. (See figure 9.)

Figure 9. Over-the-year employment change in other services, by major component industry, seasonally adjusted, in thousands, 2017, 2018, and 2019

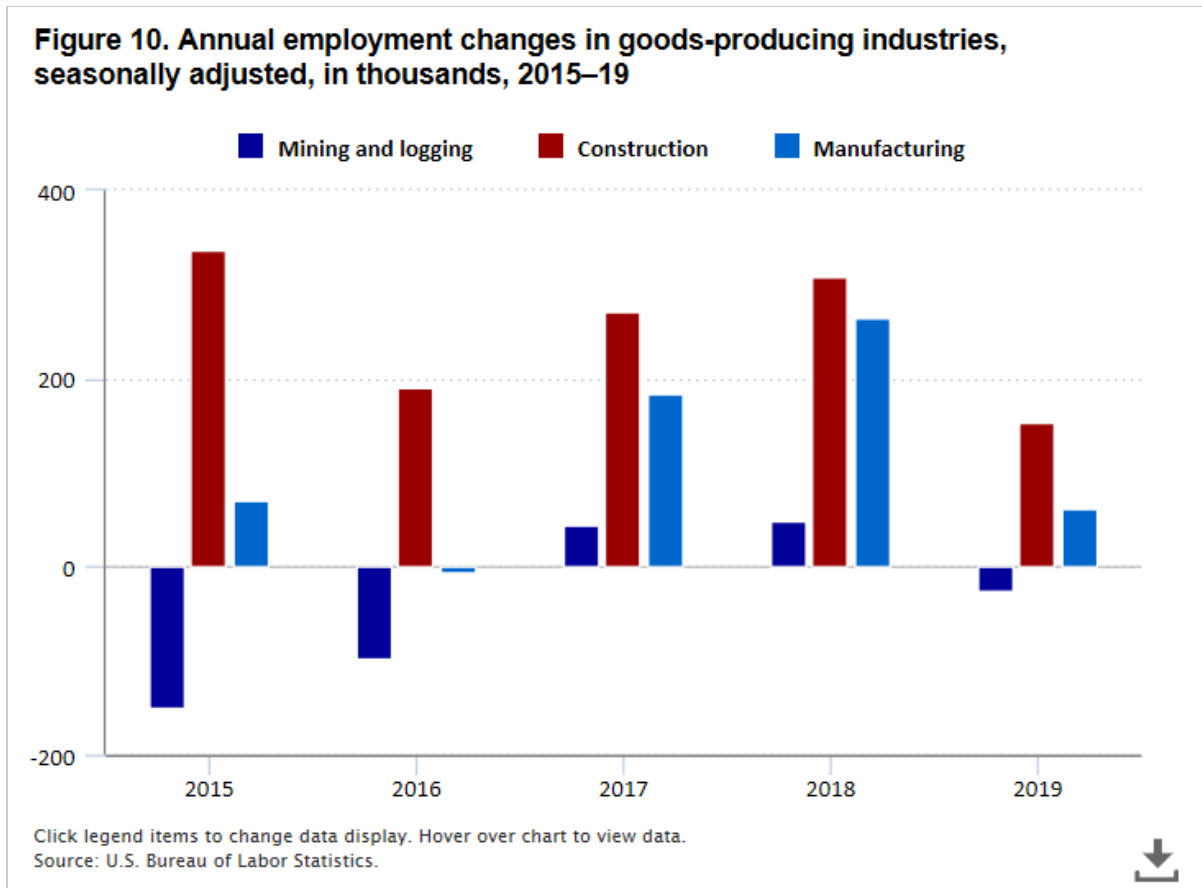


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Source: U.S. Bureau of Labor Statistics.



Job growth deceleration

Employment gains slowed markedly in goods-producing industries and in transportation and warehousing in 2019. Within goods-producing industries, construction and manufacturing gained fewer jobs in 2019, compared with that in the previous year, and employment in mining and logging declined by 26,000. Overall, goods-producing industries added 188,000 jobs in 2019, which was 434,000 fewer jobs added than in 2018. (See figure 10.)



Manufacturing

Manufacturing employment grew by 61,000 in 2019, less than a quarter of the 264,000 jobs added in 2018. Sharp reversals in employment growth occurred in machinery, fabricated metal products, motor vehicles and parts, and primary metals, all of which had gained jobs a year earlier. (See table 2.)

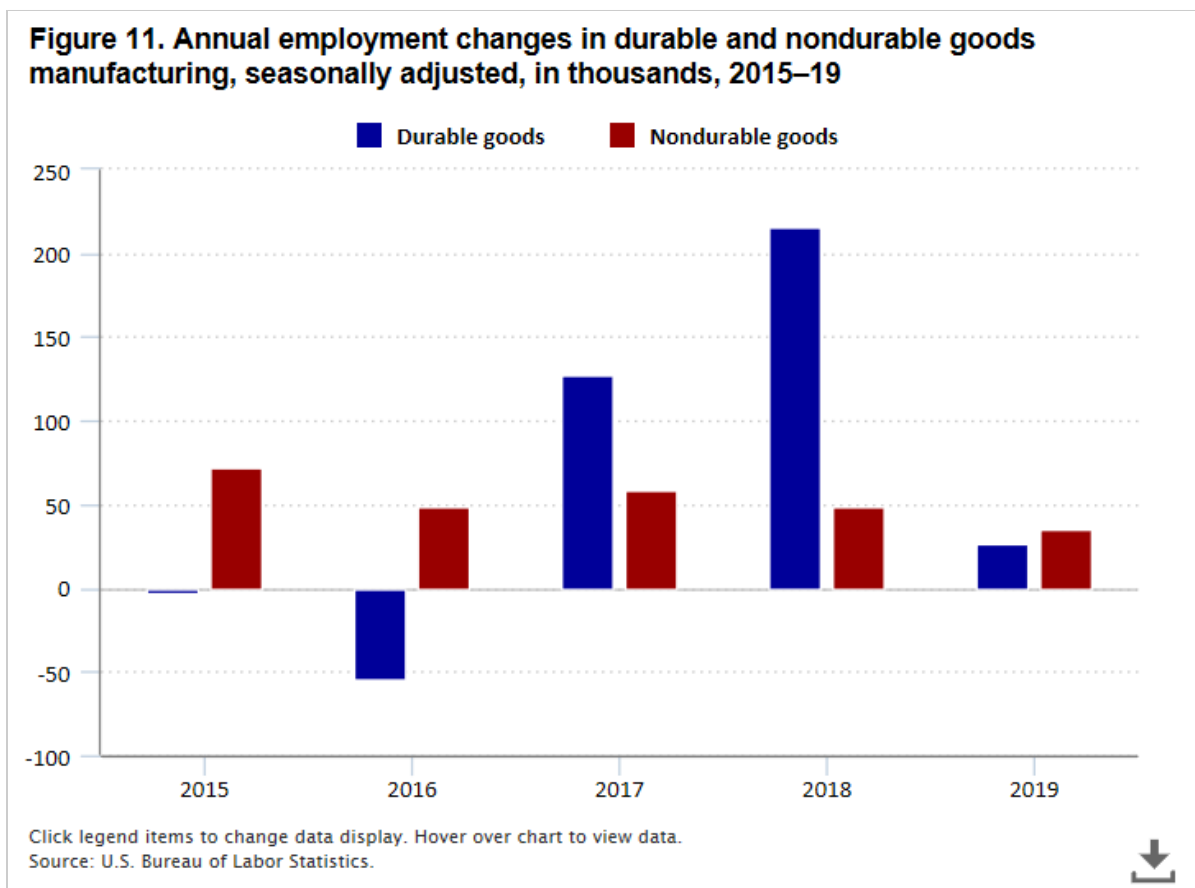
Table 2. Over-the-year change in employment, by selected manufacturing industries, seasonally adjusted, in thousands, 2018–19

Industry	2018	2019	Difference
Machinery	34.0	-12.1	-46.1
Fabricated metal products	47.2	-3.5	-50.7
Motor vehicles and parts	28.8	-13.0	-41.8
Primary metals	11.9	-11.2	-23.1

Source: U.S. Bureau of Labor Statistics.

In 2019, an employment strike within motor vehicles and parts manufacturing occurred in October, with about 45,000 workers falling from payrolls.^[7] The strike was resolved by the following month, with no net impact on the industry's employment change over the year.

Employment in durable goods manufacturing, which had grown by 216,000 in 2018, was essentially flat in 2019 (+26,000). (See figure 11.) This weakness in durable goods manufacturing employment was consistent with durable goods orders declining \$8.2 billion over the year and exports of goods decreasing \$21.3 billion in 2019.^[8] In addition, the Institute for Supply Management Purchasing Managers Index, which measures activity in the manufacturing sector, declined 6.9 points over the year in December 2019, reaching 47.2, the lowest reading since June 2009—a level below 50 indicates a contraction in activity.^[9]



Average weekly hours of all employees in manufacturing declined by 0.5 hour in 2019, while the average workweek for production employees fell by 0.6 hour. (See table 3.) The manufacturing workweek is considered a leading economic indicator, because manufacturers typically respond to changes in demand for their goods by adjusting worker hours before adding or laying off workers. Within manufacturing, declines in average weekly hours were widespread. In 2019, average hourly earnings for all employees in manufacturing grew by 3.0 percent, surpassing its 2.0-percent rate of growth in 2018. Production worker earnings advanced 2.8 percent in 2019, essentially mirroring its 2018 increase of 2.9 percent.^[10]

Table 3. Average weekly hours in manufacturing industries of all employees and of production employees, seasonally adjusted, 2017–19

Industry	All employees			Production employees		
	Dec 2017	Dec 2018	Dec 2019	Dec 2017	Dec 2018	Dec 2019

See footnotes at end of table.

Table 3. Average weekly hours in manufacturing industries of all employees and of production employees, seasonally adjusted, 2017–19

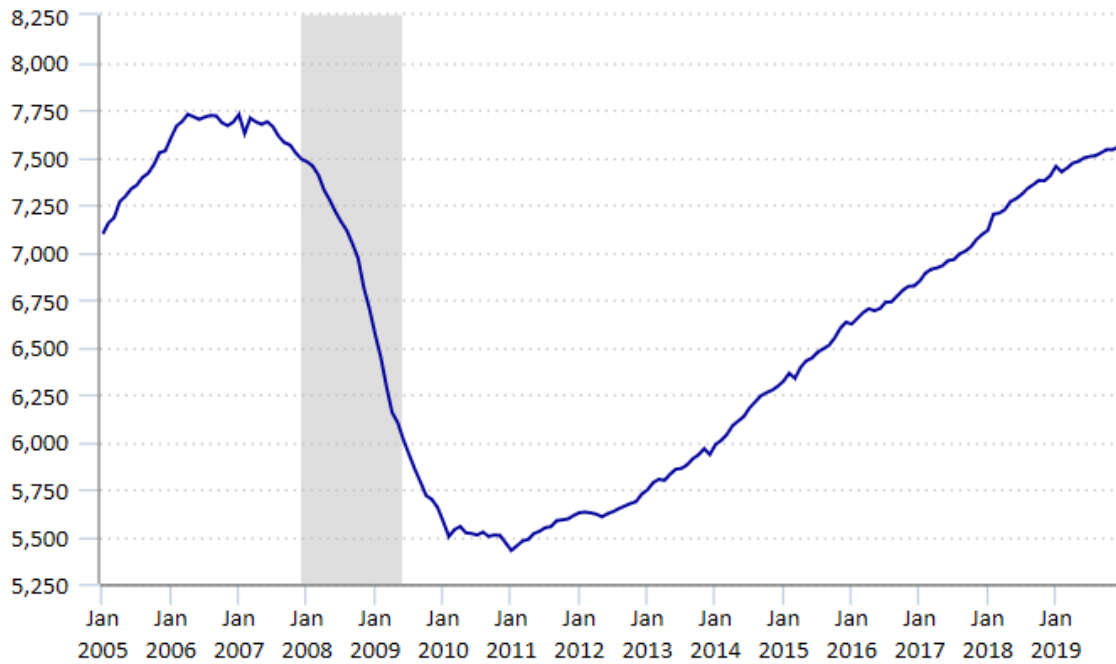
Industry	All employees			Production employees		
	Dec 2017	Dec 2018	Dec 2019	Dec 2017	Dec 2018	Dec 2019
Manufacturing	40.8	40.9	40.4	41.8	42.0	41.4
Durable goods	41.3	41.2	40.9	42.2	42.5	41.7
Wood products	40.9	40.8	40.6	41.9	41.8	41.8
Nonmetallic mineral products	41.6	42.9	42.1	43.6	44.6	43.9
Primary metals	43.0	43.3	43.1	43.6	44.7	43.6
Fabricated metal products	41.0	40.9	40.6	42.1	42.0	41.5
Machinery	41.4	40.9	41.1	42.7	42.5	42.0
Computer and electronic parts	40.8	40.3	39.9	41.0	40.5	40.3
Electrical equipment and appliances	41.4	40.9	39.8	42.1	42.1	40.6
Transportation equipment	43.0	42.8	42.3	44.1	44.8	43.1
Motor vehicles and parts	43.5	42.7	42.7	44.0	45.0	43.1
Furniture and related products	39.0	38.6	38.7	38.7	39.5	39.6
Miscellaneous durable goods	38.5	39.3	38.9	39.2	39.7	38.9
Nondurable goods	39.9	40.3	39.7	41.2	41.3	40.8
Food manufacturing	40.0	40.8	40.4	41.3	41.9	41.4
Textile mills	41.4	41.5	43.2	41.2	41.3	44.2
Textile product mills	39.3	38.9	37.2	39.3	38.5	38.3
Apparel	36.9	38.6	38.5	37.6	35.9	38.7
Paper and paper products	41.7	41.8	40.3	42.6	42.6	41.9
Printing and related support activities	38.2	38.1	37.5	39.4	38.8	38.6
Petroleum and coal products	42.6	45.4	45.5	45.6	45.5	46.2
Chemicals	40.8	41.3	40.1	41.4	41.8	40.9
Plastics and rubber products	41.2	41.1	40.8	42.4	41.8	40.6
Miscellaneous nondurable goods	34.0	33.2	32.9	37.6	36.5	36.9

Source: U.S. Bureau of Labor Statistics, Current Employment Statistics program.

Construction

Construction employment continued to gain ground in its recovery; however, the gain of 153,000 jobs in 2019 was less than half the gain in the previous year (+309,000). (See figure 12.) The deceleration in employment growth occurred in all component industries and also coincided with a slight slowdown in housing starts and a decline in the value of construction put in place in 2019.^[11] (See figure 13 and table 4.) As of December 2019, employment in the industry was still 171,000 below its last employment peak in April 2006.

Figure 12. Employment in construction, seasonally adjusted, in thousands, January 2005 to December 2019



Hover over chart to view data.

Shaded area represents a recession as determined by the National Bureau of Economic Research.

Source: U.S. Bureau of Labor Statistics.



Figure 13. Over-the-year employment change in construction, by major component industry, seasonally adjusted, in thousands, 2017, 2018, and 2019

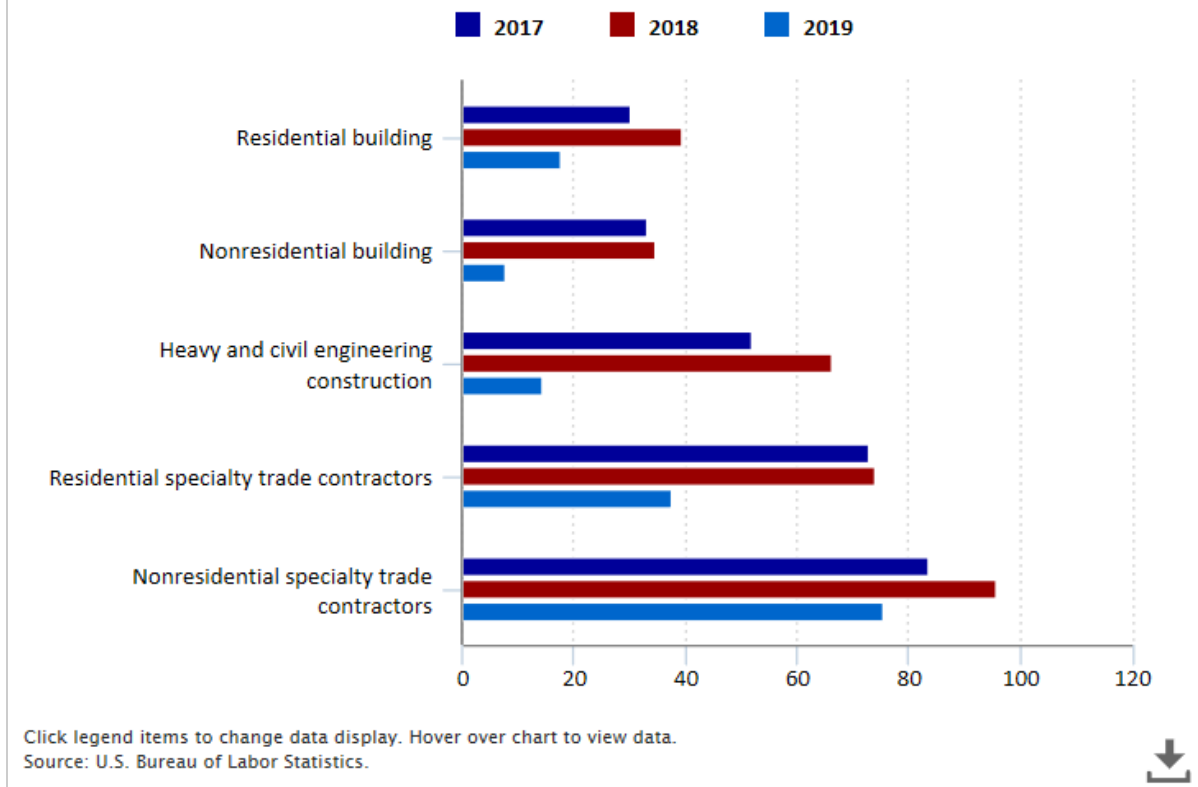


Table 4. Construction-related economic indicators, over-the-year percent changes, seasonally adjusted, 2016–19

Indicator	2016	2017	2018	2019
Value of construction put in place	7.1	4.5	3.3	−0.3
Residential	10.4	12.3	2.7	−4.6
Nonresidential	5.2	−0.5	3.7	2.8
Housing starts	5.6	2.5	3.9	3.3

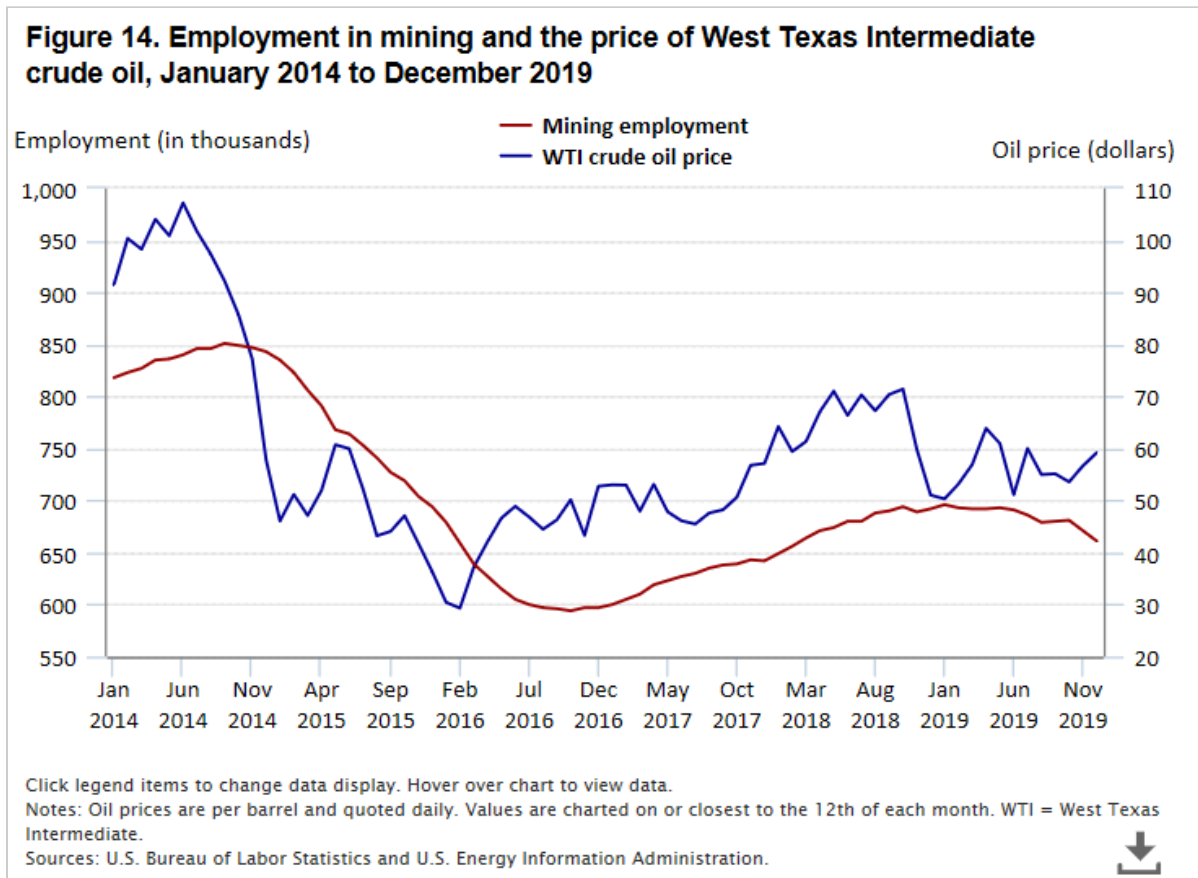
Source: U.S. Census Bureau.

Mining and logging

Mining and logging employment declined by 26,000 over the year, following gains of 44,000 and 49,000 in 2017 and 2018, respectively. Support activities for mining shed 43,000 jobs, after adding an equal number a year earlier. An overall downward trend in oil prices over the year may have contributed to the loss in jobs in support activities.^[12] Oil and gas extraction, however, added 17,000 jobs in 2019, softening the overall employment decline within mining and logging.

Changes in employment in mining tend to correlate with movements in the price of crude oil, but turning points in the employment series can lag those in the price of oil by several months. (See figure 14.) For instance, the September 2014 employment peak and the October 2016 employment trough in mining lagged the respective

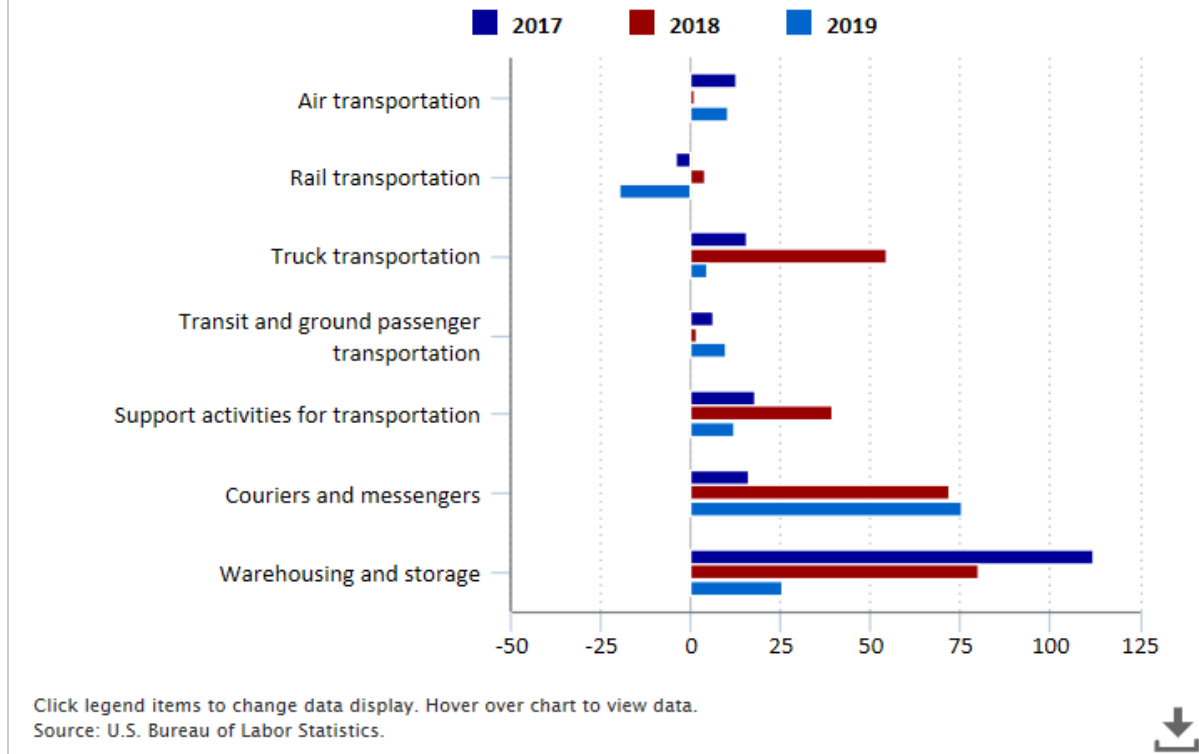
peak and trough in the price of West Texas Intermediate crude oil by 3 months and 8 months, respectively. A later employment peak in January 2019 followed an October 2018 peak in oil prices by just 2 months.



Transportation and warehousing

Although transportation and warehousing added 118,000 jobs in 2019, the gain was less than half that of 2018. Warehousing and storage, truck transportation, and support activities for transportation all saw their over-the-year jobs gains either shrink considerably or disappear in 2019, and rail transportation transitioned to a job loss in 2019 (–20,000) after changing little in 2018. (See figure 15.) A transition to a new method of operations by many railroads in 2019 has shifted that industry’s priority from assembling trains of cars to achieve a specific length before moving a train to moving cars as a priority, regardless of the achieved train length.^[13] The prior method often resulted in canceled trains if the desired train length was not achieved. This shift has purportedly led to a more efficient use of labor and other resources in the industry, which may have reduced the number of workers required in 2019. Couriers and messengers added 76,000 jobs in 2019, in line with the gain of 72,000 the previous year.

Figure 15. Over-the-year employment change in transportation and warehousing, by selected component industries, seasonally adjusted, in thousands, 2017, 2018, and 2019

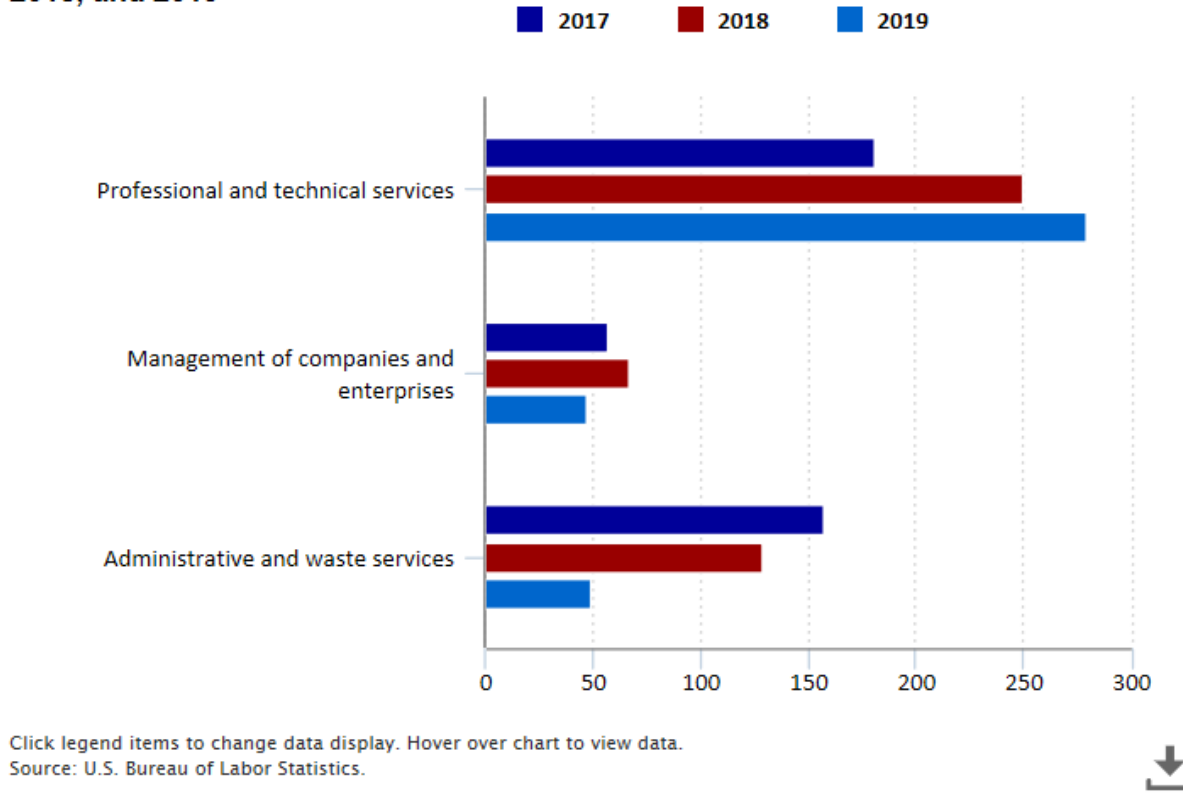


Consistent with the weakness in transportation and warehousing employment in 2019, the Cass Freight Index on shipments, a measure of shipment volumes across the country, declined 7.9 percent in 2019.^[14] This decline followed a 0.8-percent decline in 2018. Since reaching a high in May 2018, the Index has fallen 19.5 percent.

Professional and business services

Professional and business services added 375,000 jobs in 2019, down from 445,000 added the previous year. This deceleration was driven by changes within the administrative and waste services component of the industry, which added 80,000 fewer jobs in 2019 than in 2018. (See figure 16.) Employment in temporary help services was weak in 2019 (−43,000), compared with employment in 2018 (+26,000).

Figure 16. Over-the-year employment change in professional and business services, by component industry, seasonally adjusted, in thousands, 2017, 2018, and 2019

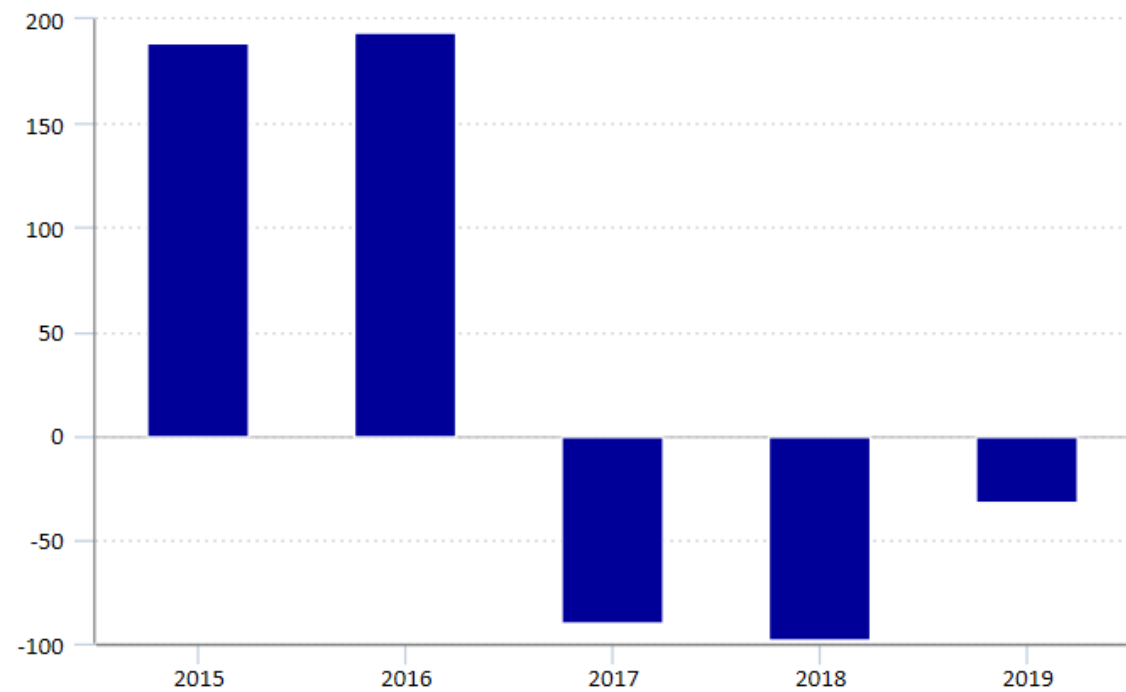


The deceleration in employment growth within administrative and waste services was somewhat offset by a slight acceleration in job gains in professional and technical services. Jobs increased slightly more in accounting and bookkeeping, computer systems design and related services, and management and technical consulting services. Overall, professional and technical services added 279,000 jobs in 2019, which was 29,000 more than were added in 2018.

Continued job losses

Retail employment continued to trend lower in 2019 (–32,000). (See figure 17.) Since the most recent employment peak in January 2017, the industry has shed 248,000 jobs.

Figure 17. Over-the-year employment change in retail trade, seasonally adjusted, in thousands, 2015–19

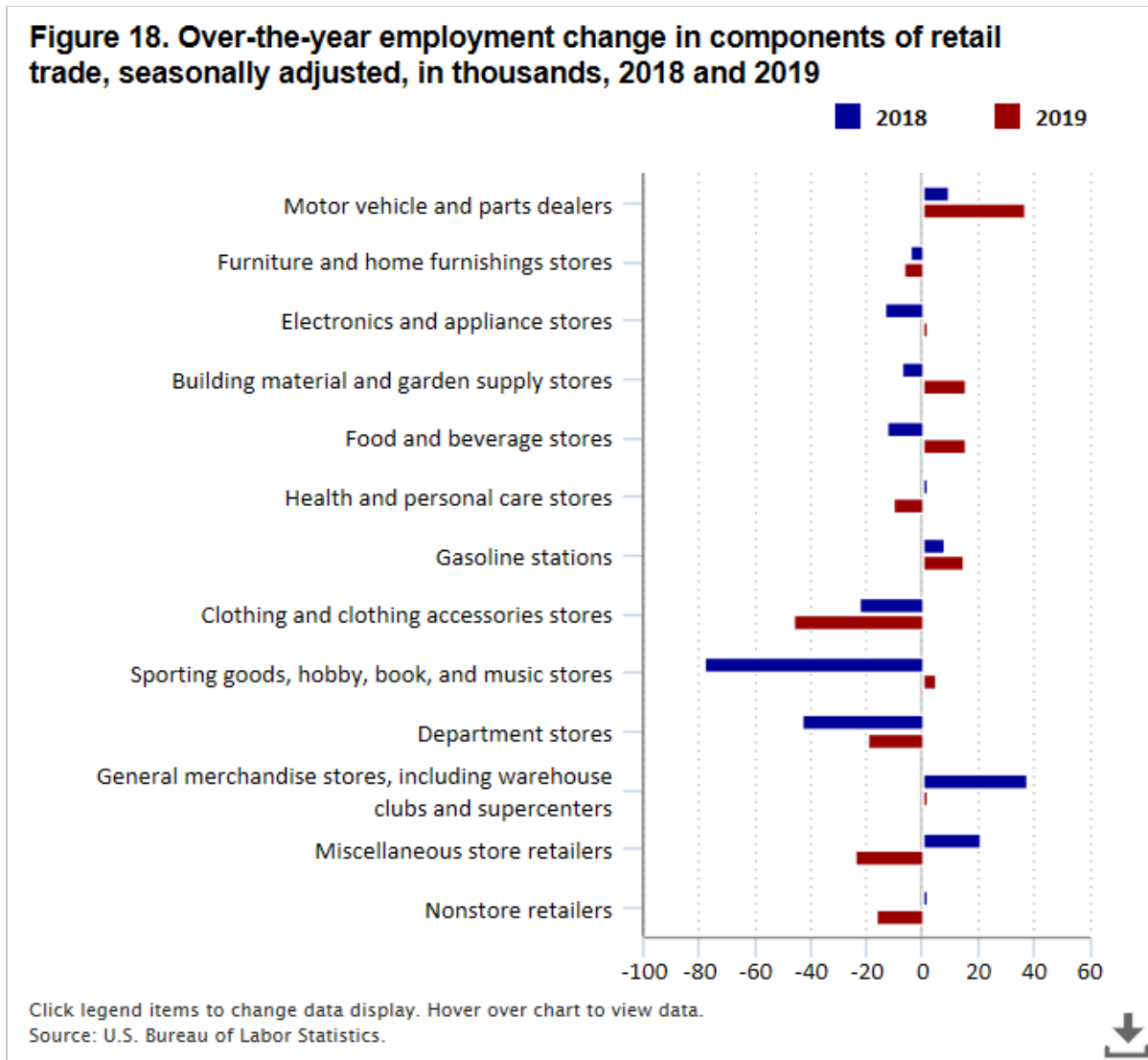


Hover over chart to view data.

Source: U.S. Bureau of Labor Statistics.



Within retail trade, clothing and clothing accessories stores lost 46,000 jobs over the year, more than the total number of jobs lost over the previous 2 years. Miscellaneous store retailers, an industry which includes establishments such as florists, art dealers, and pet supplies stores, lost 24,000 jobs in 2019, more than offsetting a net job gain in 2018. (See figure 18.) Department stores, which lost 43,000 jobs in 2018, lost 19,000 in 2019.

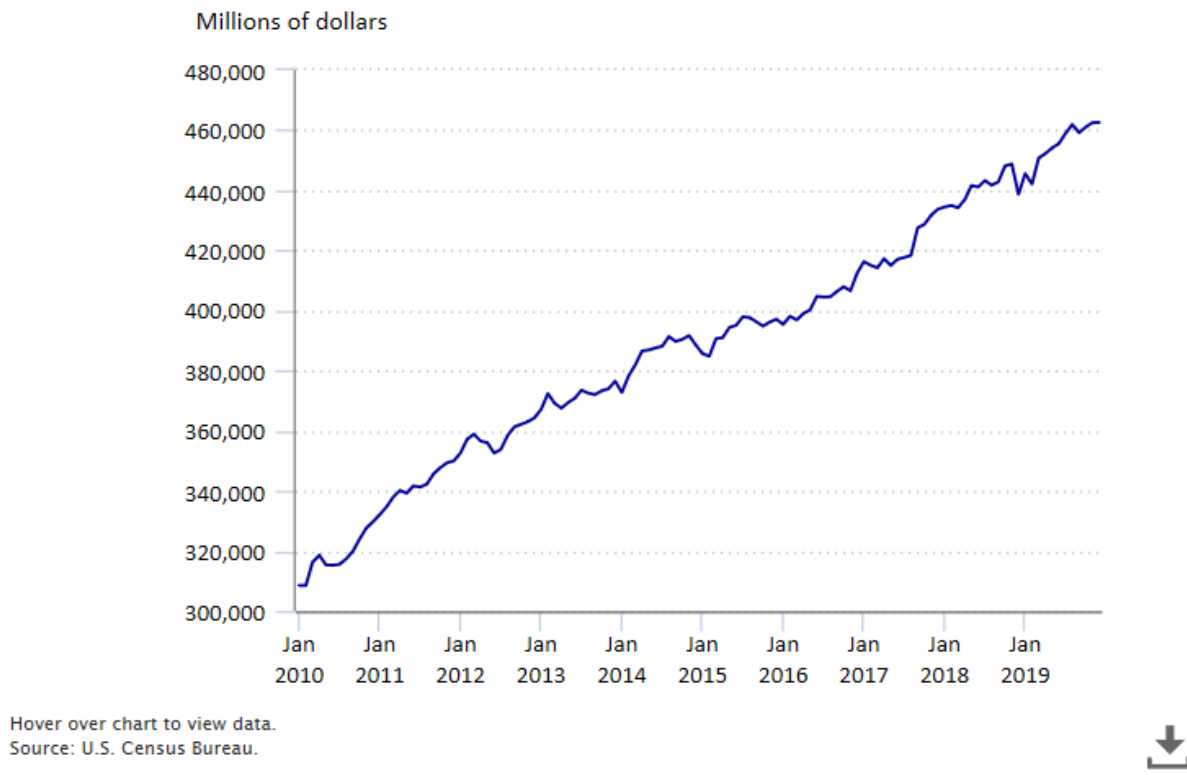


Among other retail industries, employment in sporting goods, hobby, book, and music stores was essentially flat over the year (+5,000), following a steep loss of 78,000 in 2018. Job growth in motor vehicle and parts dealers accelerated in 2019; this industry added 37,000 jobs after showing little change in 2018 (+10,000).

In 2019, weakness in retail trade employment coincided with a spike in announcements of store closures throughout the year. One tally noted a near 60-percent increase in store closure announcements, with closings rising to 9,300 from 5,800 the year before.^[15] In addition, consumer sentiment was little changed in 2019 (+1.0 percent) following an increase of 2.5 percent in 2018, and total vehicle sales fell 4.3 percent in 2019, following a gain of 1.1 percent in 2018.^[16]

Despite the spate of closures of brick and mortar stores and other weak retail-related indicators, retail sales rose by 5.4 percent in 2019, outpacing a 1.2-percent gain in 2018.^[17] (See figure 19.) E-commerce as a percent of retail sales continued to march higher, reaching 11.4 percent by the fourth quarter of 2019, a gain of 1.3 percentage points over the year.^[18]

Figure 19. Retail sales, excluding food services, seasonally adjusted, January 2010 to December 2019



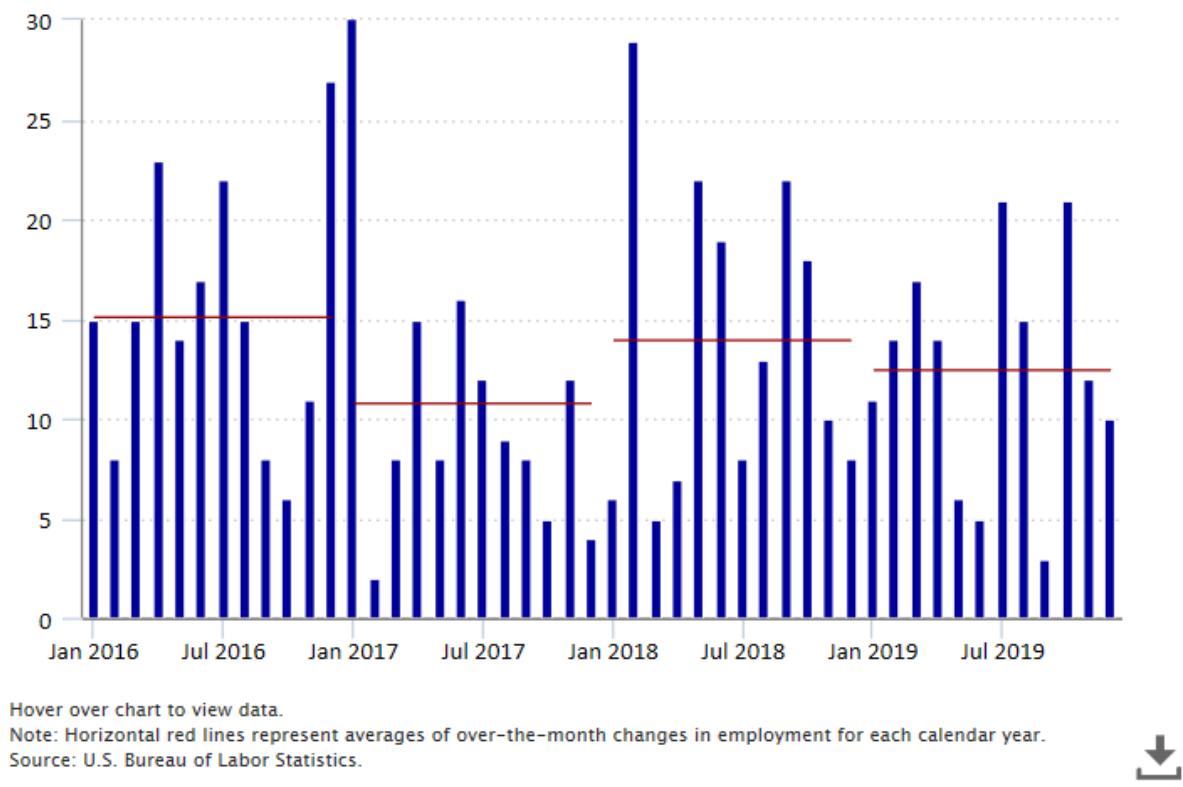
Steady job growth

Some industry sectors in 2019 had employment gains similar to job growth in previous years. This section discusses two sectors in which employment growth remained steady.

Financial activities

With 149,000 jobs added in 2019, employment growth in financial activities remained in line with gains of the previous 3 years. (See figure 20.) Real estate and rental and leasing gained 66,000 jobs in 2019, similar to gains in both 2018 and 2017. Finance and insurance added 83,000 jobs in 2019, slightly weaker than the 105,000 jobs added in 2018.

Figure 20. Over-the-month change in financial activities employment, seasonally adjusted, in thousands, January 2016 to December 2019

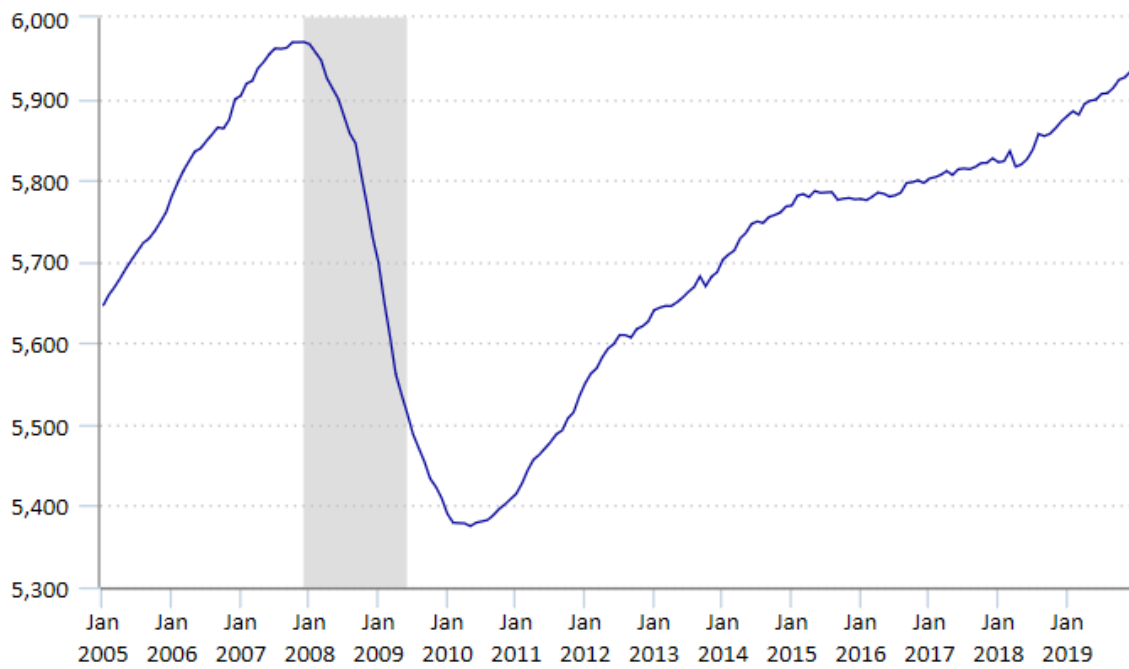


Economic indicators for the industry were generally positive over the year. The federal funds rate, which had increased more than a full point in 2018, fell roughly 0.9 point in 2019.^[19] Similarly, 30-year fixed mortgage rates fell 0.9 point in 2019, to 3.73, after gaining 0.7 point the in 2018.^[20] An environment of declining interest rates can both positively and negatively affect employment within the financial activities sector. That is, lower rates can squeeze profit margins of commercial banks, potentially leading to lower levels of employment in the industry. Conversely, declines in lending rates can stimulate lending and refinance activity in the sector, potentially leading to employment gains.^[21] In addition, the Standard & Poor's or S&P 500 Index posted a gain of about 29 percent in 2019, after declining by over 6 percent a year earlier.^[22] Difficulties in hiring in 2019 may have contributed to the slight slowing in job growth. Executives in the insurance market in particular noted difficulty in filling job vacancies during the year.^[23]

Wholesale trade

Wholesale trade added 61,000 jobs in 2019, slightly more than that in 2018 (+46,000). The industry's employment edged closer to a full recovery in 2019, 36,000 below the all-time employment high in December 2007. (See figure 21.) Durable goods accounted for nearly two-thirds of the sector's annual employment gains. (See figure 22.)

Figure 21. Employment in wholesale trade, seasonally adjusted, in thousands, January 2005 to December 2019



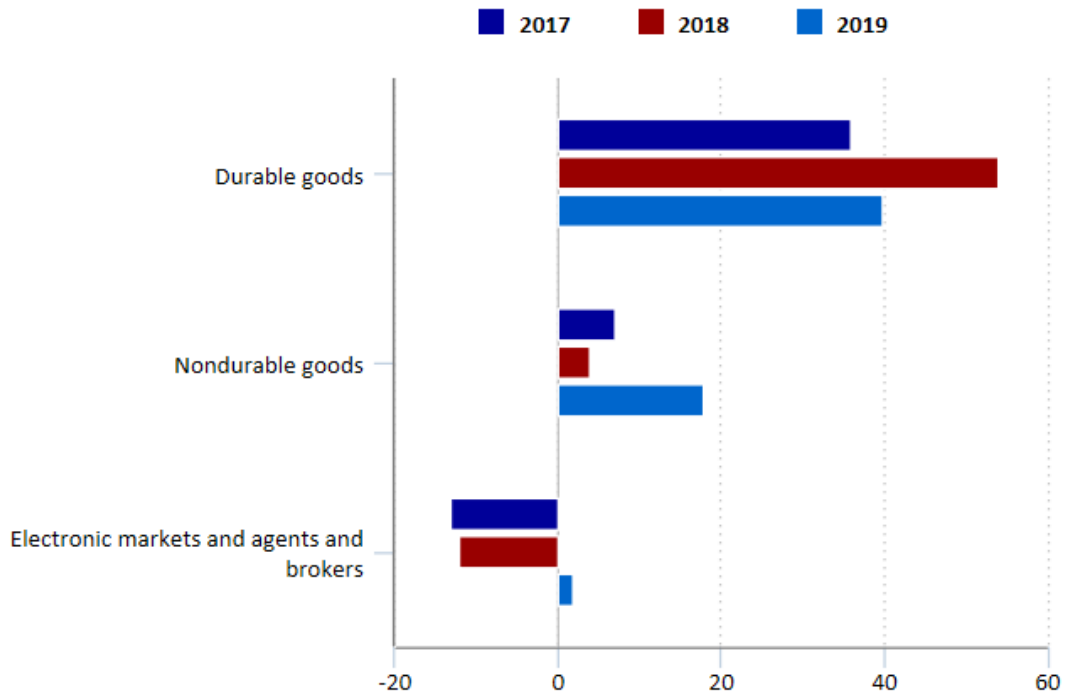
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Shaded area represents a recession as determined by the National Bureau of Economic Research.

Source: U.S. Bureau of Labor Statistics.



Figure 22. Over-the-year employment change in components of wholesale trade, seasonally adjusted, in thousands, 2017, 2018, and 2019



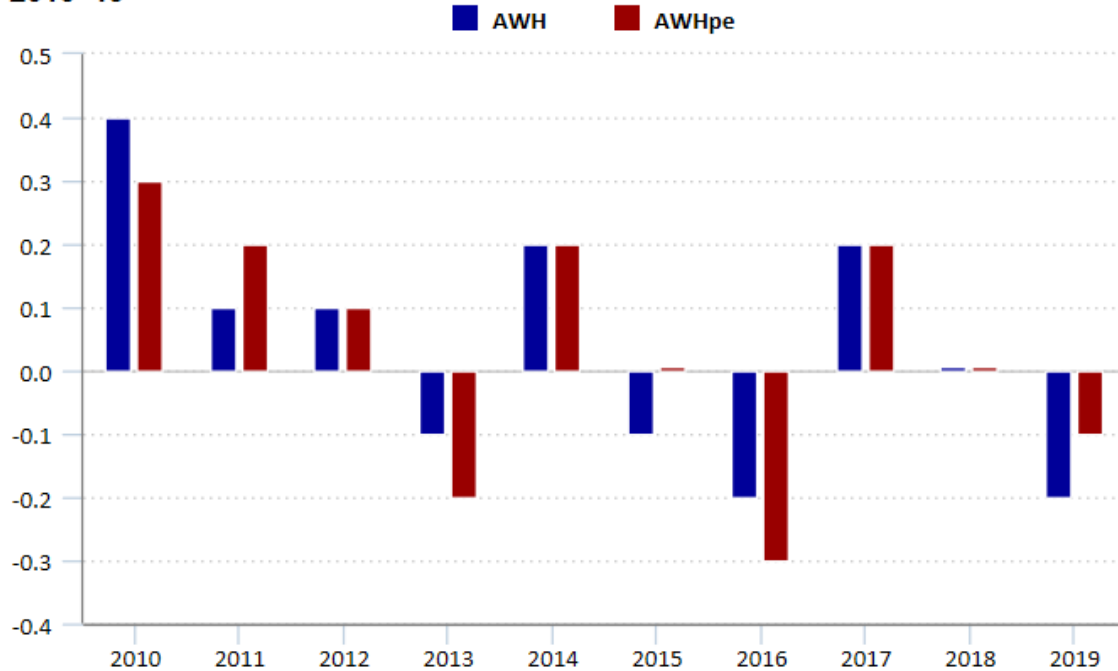
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Source: U.S. Bureau of Labor Statistics.



Mixed hours and earnings

Average weekly hours declined by 0.2 hour in 2019 for all employees and by 0.1 hour for production and nonsupervisory employees. (See figure 23.) Almost every sector experienced declines in both measures of hours, with transportation and warehousing and nondurable goods manufacturing showing the largest over-the-year declines for all employee hours (−0.6 hour each). (See table 5.) The largest declines in hours for production and nonsupervisory workers occurred in durable goods manufacturing (−0.8 hour), contributing to a 0.6-hour decline in production-worker hours for all of manufacturing. Construction worker hours also declined 0.6 hour in 2019.

Figure 23. Over-the-year change in average weekly hours of all employees and of production and nonsupervisory employees, seasonally adjusted, 2010–19



Click legend items to change data display. Hover over chart to view data.

Notes: AWH = average weekly hours of all employees, and AWHpe = AWH production and nonsupervisory employees.

Source: U.S. Bureau of Labor Statistics.



Table 5. Over-the-year change in average weekly hours of all employees and of production and nonsupervisory employees, seasonally adjusted, by industry, 2019

Industry	All employees	Production and nonsupervisory employees
Mining and logging	-0.4	-0.5
Construction	-0.3	-0.6
Manufacturing	-0.5	-0.6
Durable goods	-0.3	-0.8
Nondurable goods	-0.6	-0.5
Wholesale trade	-0.2	-0.3
Retail trade	0.0	0.3
Transportation and warehousing	-0.6	-0.3
Utilities	0.1	0.4
Information	0.0	-0.4
Financial activities	-0.1	-0.1
Professional and business services	0.0	-0.1
Education and health services	0.0	0.1
Leisure and hospitality	-0.2	-0.1
Other services	-0.1	-0.1

Source: U.S. Bureau of Labor Statistics.

Average hourly earnings of all employees grew 3.0 percent in 2019, the second most rapid calendar-year gain of the last 10 years. Hourly earnings had risen by 3.4 percent in 2018. Similarly, average hourly earnings of production and nonsupervisory employees advanced 3.2 percent over the year, slightly down from the 3.5-percent gain in 2018.

The rate of gain in average hourly earnings of all employees varied widely in 2019, ranging from 1.2 percent in utilities to 5.8 percent in mining and logging. (See figure 24.) Adjusted for inflation, average hourly earnings of all employees posted over-the-year gains throughout 2019 and ended the year 0.7 percent higher than that of a year earlier, although the growth rate slowed during much of the year as growth in nominal earnings slowed and inflation trended up. (See figure 25.) The combination of the increase in real average hourly earnings over the year and the 0.6-percent decline of the average workweek in 2019 yielded little change in real average weekly earnings over the year (+0.1 percent), marking a slowdown from the 1.4-percent gain in 2018. Put differently, workers' buying power was essentially unchanged over the year.

Figure 24. Average hourly earnings of all employees, over-the-year percent change, seasonally adjusted, December 2018 to December 2019

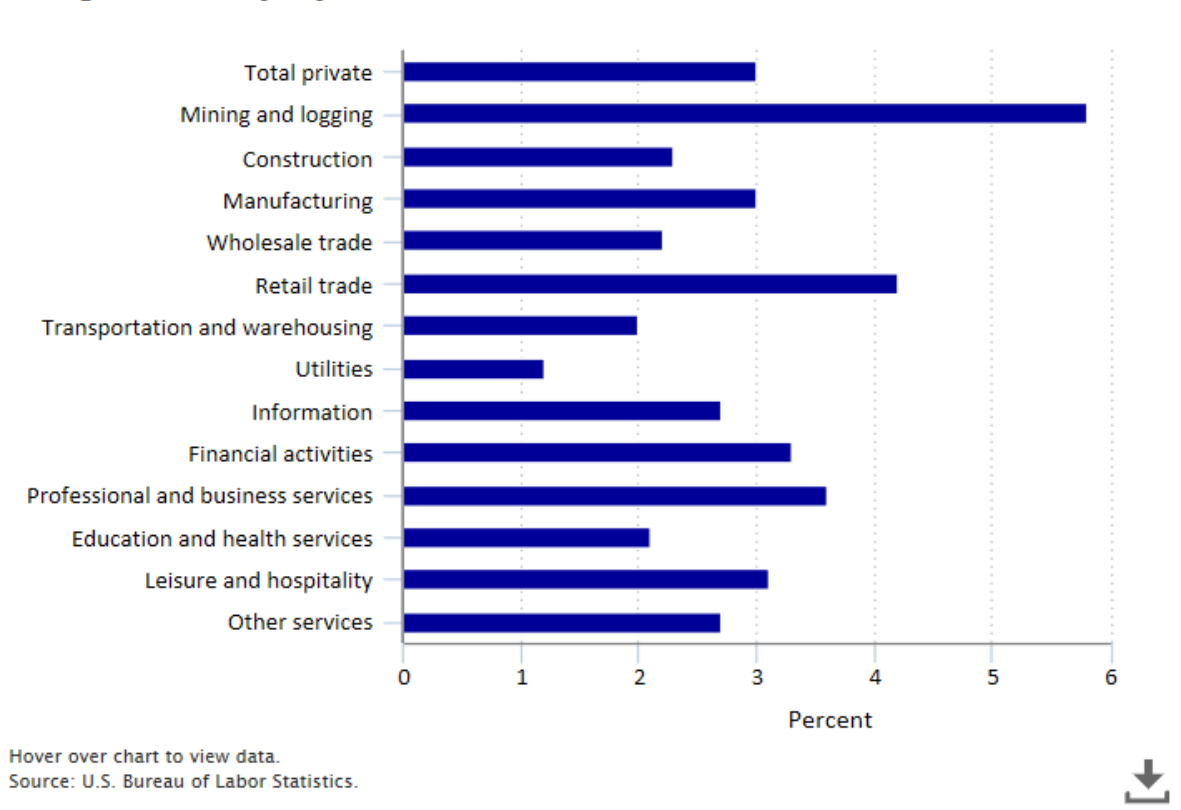
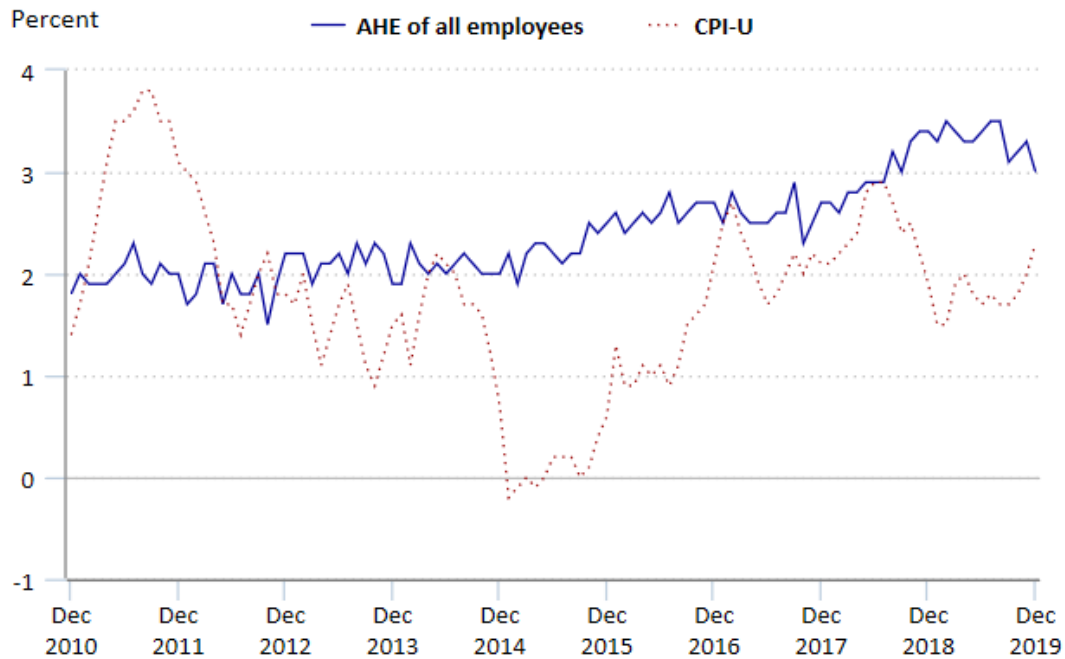


Figure 25. Over-the-year percent change in average hourly earnings of all employees, and Consumer Price Index for all Urban Consumers, seasonally adjusted, December 2010 to December 2019



Click legend items to change data display. Hover over chart to view data.

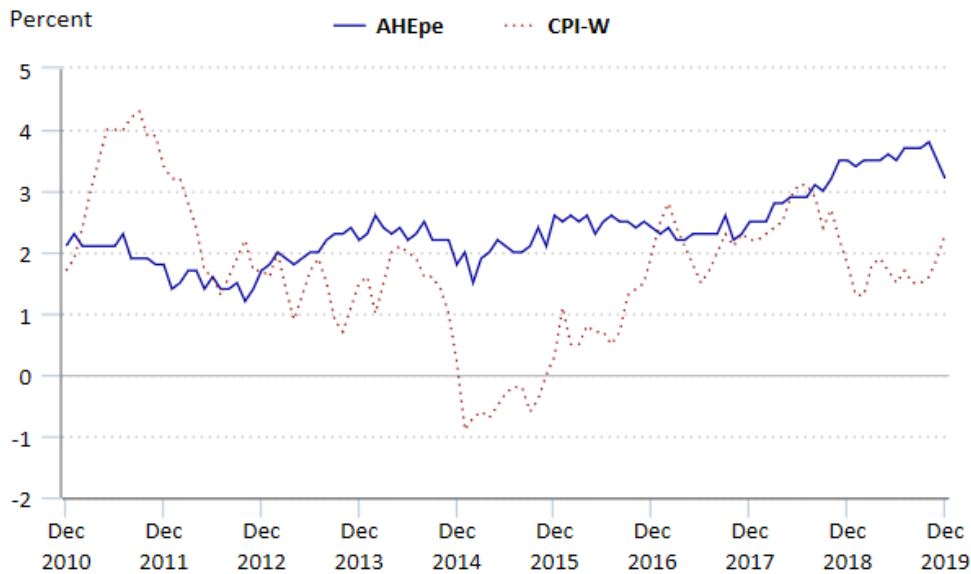
Notes: AHE = average hourly earnings, and CPI-U = Consumer Price Index for all Urban Consumers.

Source: U.S. Bureau of Labor Statistics.



Real average hourly earnings of production and nonsupervisory employees advanced 0.9 percent in 2019 (see figure 26), and the workweek for those workers declined 0.3 percent. These changes combined to yield a 0.6-percent uptick in real average weekly earnings for those workers in 2019, a slowdown from the 1.7-percent gain in 2018.

Figure 26. Over-the-year percent change in average hourly earnings of production and nonsupervisory employees and Consumer Price Index for all Wage and Clerical Workers, seasonally adjusted, December 2010 to December 2019



Click legend items to change data display. Hover over chart to view data.

Notes: AHEpe = average hourly earnings of production and nonsupervisory employees, and CPI-W = Consumer Price Index for all Wage and Clerical Workers.

Source: U.S. Bureau of Labor Statistics.



Conclusion

Nonfarm payroll employment continued its longest period of recovery and expansion, with an annual gain of 2.1 million jobs in 2019, averaging 178,000 jobs added per month. Annual job growth slowed substantially in goods-producing industries, while it accelerated in private education and health services and in leisure and hospitality.

Average hourly earnings rose over the year, in both current and inflation-adjusted dollars. Average weekly hours declined over the year; the buying power of workers' earnings was little changed in 2019.

SUGGESTED CITATION

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NOTES

¹ Gross domestic product data are from the U.S. Bureau of Economic Analysis; <https://www.bea.gov/data/gdp/gross-domestic-product>.

² The education and health services industry includes establishments in the private sector only. Public educational establishments are classified within government.

³ Data on personal consumption expenditures for health care services are from the U.S. Bureau of Economic Analysis, “Personal consumption expenditures: services: health care for United States” (FRED, Federal Reserve Bank of St. Louis, October 2019), <https://fred.stlouisfed.org/series/USPCEHLTHCARE>.

⁴ Data on sales for food services and drinking places are from the U.S. Census Bureau, “Advance retail sales: food services and drinking places” (FRED, Federal Reserve Bank of St. Louis, March 2020), <https://fred.stlouisfed.org/series/RSFSDP>.

⁵ Data on personal consumption expenditure for recreation services are from the U.S. Bureau of Economic Analysis, “Personal consumption expenditures: recreation services” (FRED, Federal Reserve Bank of St. Louis, February 2020), <https://fred.stlouisfed.org/series/DRCARC1Q027SBEA>.

⁶ For more information on the 2020 Decennial Census temporary and intermittent workers, see “Current employment statistics—CES (national),” “CES-2020 Census press package” (U.S. Bureau of Labor Statistics), <https://www.bls.gov/ces/tables/census-temporary-intermittent-workers-government-employment.htm>.

⁷ See “Current employment statistics—CES (national),” “Strikes occurring during CES survey reference period, 1990–present,” table “Summary of strike activity during CES survey reference pay period, by month, 2019” (U.S. Bureau of Labor Statistics), <https://www.bls.gov/ces/publications/strike-history.htm#2019>.

⁸ Data on manufacturers’ new durable goods orders are from the U.S. Census Bureau, “Manufacturers’ new orders: durable goods” (FRED, Federal Reserve Bank of St. Louis, March 2020), <https://fred.stlouisfed.org/series/DGORDER>. Preliminary data on exports are from the U.S. Census Bureau “U.S. international trade in goods and services, December 2019,” <https://www.bea.gov/news/2020/us-international-trade-goods-and-services-december-2019>; see “Exports (exhibits 3, 6 and 7)” under “Annual Summary” for 2019.

⁹ Data on the Purchasing Managers’ Index are from “December 2019 manufacturing ISM,” and “December 2018 manufacturing ISM,” *Report On Business*, December 2019 and December 2018 news releases (Institute for Supply Management).

¹⁰ For more on recent trends in average hourly earnings of production workers in manufacturing, see Katelynn Harris and Michael D. McCall, “The relative weakness in earnings of production workers in manufacturing, 1990–2018,” *Monthly Labor Review*, December 2019, <https://www.bls.gov/opub/mlr/2019/article/earnings-of-production-workers-in-manufacturing-1990-2018.htm>.

¹¹ Data on housing starts are from “New residential construction,” “Historical data” (U.S. Census Bureau), https://www.census.gov/construction/nrc/historical_data/index.html. Data on construction spending are from “Construction spending,” “Historical value put in place” (U.S. Census Bureau), https://www.census.gov/construction/c30/historical_data.html.

¹² Data on the price of West Texas Intermediate oil are from the U.S. Energy Information Administration, “Crude oil prices: West Texas Intermediate (WTI)—Cushing, Oklahoma” (FRED, Federal Reserve Bank of St. Louis, March 2020), <https://fred.stlouisfed.org/series/DCOILWTICO>.

¹³ For an explanation of this new method, termed “precision scheduled railroading,” see <https://www.breakthroughfuel.com/blog/precision-scheduled-railroading/> and <https://www.up.com/customers/track-record/tr091019-precision-scheduled-railroading.htm>.

¹⁴ Data are from Cass Information Systems, Inc., “Cass Freight Index: shipments” (FRED, Federal Reserve Bank of St. Louis, March 2020), <https://fred.stlouisfed.org/series/FRGSHPUSM649NCIS>.

¹⁵ Ben Unglesbee, “Store closures pass 9K in 2019,” *Retail Dive*, December 23, 2019, <https://www.retaildive.com/news/store-closures-pass-9k-in-2019/569597/>.

¹⁶ Data on consumer sentiment are from “University of Michigan: consumer sentiment” (FRED, Federal Reserve Bank of St. Louis, January 2020), <https://fred.stlouisfed.org/series/UMCSENT>. Data on total vehicle sales are from U.S. Bureau of Economic Analysis, “Total vehicle sales” (FRED, Federal Reserve Bank of St. Louis, February 2020), <https://fred.stlouisfed.org/series/TOTALSA>.

¹⁷ Data on retail sales, excluding food services, are from the U.S. Census Bureau, “Advance retail sales: retail (excluding food services)” (FRED, Federal Reserve Bank of St. Louis, February 2020), <https://fred.stlouisfed.org/series/R SXFS>.

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