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Current Employment Statistics survey: 100 years of employment, hours, and earnings

To help mark the Monthly Labor Review's centennial, the editors invited several producers and users of BLS data to take a look back at the last 100 years. For the last 100 years, the Current Employment Statistics (CES) program has produced and published critical economic data on employment and earnings. The scope of industries covered by CES has evolved over time to include the majority of the nonfarm economy, and the types of data have expanded to include, for example, average weekly hours and women workers. Over the century, changes in employment trends have been shaped by numerous forces, whether industry specific or broader in scope. CES data capture these trends and allow for an in-depth analysis of the changing employment structure of the national economy over the last 100 years.

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Each month, the U.S. Bureau of Labor Statistics (BLS) Current Employment Statistics (CES) program surveys approximately 146,000 businesses and government agencies, which represent approximately 623,000 worksites in the United States. The data collected allow CES to produce detailed industry estimates of employment, hours, and earnings on the basis of payroll records of nonfarm business establishments. These data, along with data from the Current Population Survey, serve as the first economic indicator of current employment trends each month and are used to help gauge the overall health of the U.S. economy. In addition, average weekly hours series may reflect short-term fluctuations in labor demand and typically lead changes in employment. The average hourly earnings series helps determine earnings trends and may signal potential wage-push inflation.

The CES program dates back to October 1915, when a small sample of manufacturers was asked to provide total employment and payroll data. That year, their employees earned an average $10.28 per week,[1] compared with $832.42 per week for employees of all manufacturing industries 100 years later.

In 1919, BLS first published monthly data on employment and earnings for production workers in manufacturing (monthly average weekly hours data for these workers were added a few years later). That same year, CES began publishing annual employment data for various industries, including detailed industries in the goods-producing sector and in the service-providing sector, the latter of which included wholesale and retail trade, transportation and public utilities, and government. (See table 1.) Nonfarm payroll employment rose from 27.1 million in 1919 to 143.1 million in December 2015, with growth averaging 1.7 percent per year. However, annual job growth has fluctuated over the period. For example, employment fell by a series low of 11.3 percent in 1932 and rose by 12.9 percent in 1941, a series high.

Table 1. Annual average employment, not seasonally adjusted, 1919

Industry	Employment level (in thousands)
Total nonfarm	27,078
Total private	24,402
Goods-producing	12,828
Mining	1,133
Construction	1,036
Manufacturing	10,659
Service-providing	14,250
Private service-providing	11,574
Transportation and public utilities	3,711
Wholesale and retail trade	4,514
Government	2,676

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

Since 1939, the CES program has published monthly data for total nonfarm employment and employment in selected major industries on the basis of the Standard Industrial Classification (SIC) system for all major industry sectors. Over time, more industry detail was added to SIC. In 2003, CES estimates were converted to the North American Industry Classification System (NAICS), which divided the industry structure into additional sectors.[2] Where possible, some CES employment series, including those for major industry sectors, have been reconstructed as far back as 1939. However, all national CES employment series first published under NAICS have series start dates of no later than 1990.

The analysis in this article focuses on longrun employment trends dating as far back as 1939; for employment series with later start dates, shorter periods of time are analyzed. Changes in employment for major industry sectors from January 1939 through December 2015 are discussed, and major historical events or other dynamics within the economy causing changes in employment trends are highlighted. Where more detailed industries have substantially contributed to the changes observed at the sector level, those industries are also discussed.

Overall employment trends

Since January 1939, job growth in the United States has averaged 2.1 percent per year. (See table 2.) Private service-providing industries have experienced relatively consistent growth and increased their share of

employment from 50 percent to 71 percent through December 2015. By contrast, the share of total employment in goods-producing industries fell from 37 percent to 14 percent over the same period.

Table 2. Employment change as a percentage of total nonfarm (TNF) change by industry, seasonally adjusted, 1939–2015

Total nonfarm data	1939–45	1945–72	1972–79	1979–2001	2001–15	1939–2015	
Employment level change (in thousands)	9,189	36,158	15,403	40,332	12,141	113,223	
Annualized percent change	3.9	2.5	2.7	1.7	0.6	2.1	
Industry data (industry employment change as a percent of TNF employment change)	1939–45	1945–72	1972–79	1979–2001	2001–15	1939–2015	
						Employment level change (in thousands)	Percent of TNF change
Total private	80	78	84	87	94	95,171	84
Goods-producing	40	22	14	-5	-28	8,580	8
Mining and logging	0	-1	2	-1	1	-121	0
Construction	2	7	4	5	-2	5,458	5
Manufacturing	38	16	7	-9	-28	3,243	3
Private service-providing	40	56	70	92	122	86,591	76
Trade, transportation, and utilities[(1)]	18	19	22	18	12	20,478	18
Wholesale trade	3	5	6	3	2	4,418	4
Retail trade	7	12	13	12	6	12,654	11
Information	5	2	2	3	-6	1,651	1
Financial activities	1	6	7	7	2	6,819	6
Professional and business services	6	9	12	21	32	18,047	16
Private education and health care	4	9	13	23	52	20,997	19
Leisure and hospitality	4	8	9	13	28	13,482	12
Other services	2	3	5	7	3	5,117	5
Government	20	22	16	13	6	18,052	16

Notes:

[(1)] Includes additional series not shown separately.

Note: Calculations for 1939 use January data. Calculations for all other years use December data.

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

During the World War II (WWII) era, employment rose rapidly January 1939 through November 1943 (+12.9 million), then fell by 3.7 million through December 1945. On net, employment increased by an annualized rate of 3.9 percent during that time span. Job gains were concentrated in manufacturing and government, which accounted for 38 and 20 percent, respectively, of net employment growth.

From 1948 through 1972, labor productivity (output per hour of work) rose by an average 2.8 percent per year and nonfarm employment grew at an annualized rate of 2.5 percent.[3] From December 1945 through December 1972, manufacturing fell from 38 percent to 16 percent of job growth, while private service-providing industries expanded from 40 percent to 56 percent of overall growth.

Over the next 7 years, through December 1979, employment grew at a 2.7-percent annualized rate. During this period, labor productivity increased by an average of 1.5 percent per year and real gross domestic product (GDP) advanced at a 3.1-percent annualized rate. Manufacturing employment reached an alltime peak and accounted for only 7 percent of all jobs added. Government reduced its share of net employment growth during this period, while private service-providing industries added relatively more jobs. Each of three service industries—retail trade, professional and business services, and private education and health care—accounted for more than 10 percent of net employment gains during this period.

From 1979 to 2001, job growth slowed to an annualized rate of 1.7 percent. Private service-providing industries accounted for more than 90 percent of the net employment gain, and two sectors—professional and business services and private education and health care—contributed more than 20 percent each. In contrast, manufacturing suffered a net job loss.

From December 2001 through December 2015, job growth slowed to 0.6 percent annually, while real GDP grew at an annualized rate of 1.9 percent. These growth rates were dampened to a large extent by the Great Recession. Private service-providing industries added 14.9 million jobs during the 2001–15 period, while goods-producing industries cut 3.4 million jobs.

Delving into the industry details

From January 1939 through December 2015, employment across sectors has risen and fallen at varied rates. Employment in one sector has shown a net decline over this period, while employment in other sectors has grown much faster than total nonfarm employment. This section examines selected sectors during this period.

Mining and logging

Employment in the mining and logging sector declined by an annualized rate of 0.2 percent, but the industry has experienced strong trend changes. By September 1948, employment had risen to a peak of more than 1 million jobs, then started a longrun decline that lasted through 1972. After this decline, rapid job growth ensued and employment in the sector reached an alltime high of 1.3 million in November 1981 mainly because of gains in oil and gas extraction. Following this record high, job losses returned and employment fell to a record low of 566,000 in April 2003. By 2014, mining and logging employment had recovered to some extent but was still lower than its initial 1939 level. Employment in the sector declined throughout 2015.

Manufacturing

In manufacturing, employment increased by an annualized rate of 0.4 percent. Employment in the sector grew until reaching an alltime peak of 19.6 million in June 1979, then declined and never fully recovered to the peak level. In December 2015, manufacturing jobs totaled 12.3 million and accounted for 8.6 percent of nonfarm employment, compared with 9.1 million and 30.3 percent in January 1939.

Information

Employment in the information sector grew at an annualized rate of 1.2 percent. Through the turn of the century, the sector experienced longrun employment growth that accelerated in the 1990s. In March 2001, employment peaked at 3.7 million, then declined sharply in the years following, with declines led by the publishing and

telecommunications industries. The sector reduced its share of nonfarm employment from 3.7 percent in January 1939 to 1.9 percent in December 2015.

Construction

Construction employment grew at an annualized rate of 2.3 percent over the period, slightly stronger than longrun job growth for total nonfarm industries. Construction employment has been particularly sensitive to business cycles and has experienced large cyclical fluctuations throughout the history of the series, during which it increased its share of nonfarm employment from 3.8 percent to 4.6 percent.

Financial activities

Financial activities also experienced slightly stronger longrun job growth than total nonfarm industries, growing at an annualized rate of 2.4 percent over the period. The sector has experienced less volatility than most other sectors and has increased its share of nonfarm employment from 4.6 percent to 5.7 percent over the period.

Retail trade

Employment in the retail trade sector essentially kept pace with total nonfarm employment, growing at an annualized rate of 2.1 percent over the period. Its share of total nonfarm employment edged up from 10.4 percent to 11.0 percent.

Private education and health services

Private education and health services, the least cyclical sector, has experienced the strongest and most consistent job growth, with 3.7-percent annualized growth over the period. In January 1939, the sector's employment level was 1.4 million, representing 4.6 percent of all nonfarm jobs. By December 2015, employment in the sector had risen to 22.4 million, representing 15.6 percent of all nonfarm jobs. Since 1990, most of the growth in this industry has been concentrated in health care.

Professional and business services

Professional and business services also saw above-average job growth; employment in the sector grew tenfold, from around 1.9 million to 20 million over the period examined. Over the same span, the sector grew at a 3.1-percent annualized rate and increased its share of total nonfarm employment from 6.5 percent to 14.0 percent.

Leisure and hospitality

Employment in leisure and hospitality grew at a strong 2.8-percent annualized rate, increasing its share of nonfarm employment from 6.1 percent to 10.7 percent. Food services and drinking places has been the primary driver of growth within the sector, accounting for 77.4 percent of all jobs added from December 1990 through December 2015.

Other services

Employment in other services grew at a faster 3.1-percent annualized rate than total nonfarm employment over this longrun period as well, growing from 0.5 million in January 1939 to 5.7 million in December 2015. Its share of total nonfarm employment more than doubled, from 1.8 percent to 4.0 percent, over that period.

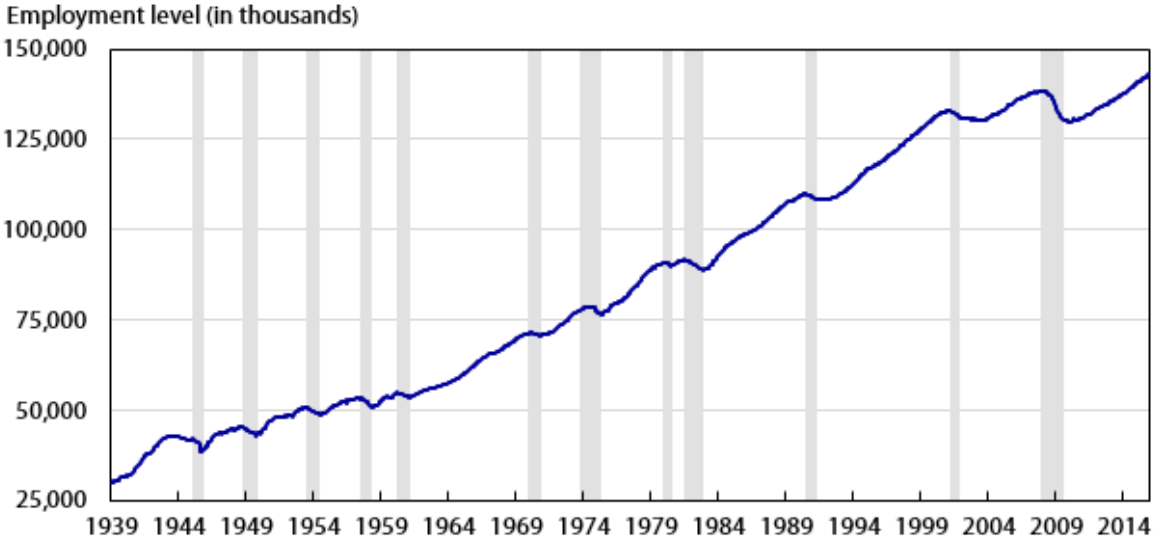
Government

Government employment experienced slightly stronger longrun growth than did total nonfarm employment over the period, but government's 2.2-percent annualized employment growth over the period was not uniform. From January 1939 through December 2015, federal government employment rose by an annualized 1.5 percent per year. WWII caused a spike in federal government employment during the early 1940s, with a subsequent decline through 1948. Employment in state and local government combined has risen by an annualized 2.3 percent from December 1955 (the first year of both series) through December 2015. By December 2015, local government accounted for nearly two-thirds of all government jobs.

Many factors affect employment trends—business cycles, changing business practices, and irregular events or shocks. Next, we take a closer look at how some of these trends have affected employment throughout the 1939–2015 longrun period.

Business cycles

Figure 1. Total nonfarm employment, seasonally adjusted, January 1939–December 2015



Note: Shaded areas represent recessions as determined by the National Bureau of Economic Research.
Source: Current Employment Statistics, U.S. Bureau of Labor Statistics.

CES employment data serve as a major economic indicator of the health of the U.S. economy. The National Bureau of Economic Research (NBER), the organization that determines recession start and end dates, relies on these data for determining business cycle turning points.[4] Since 1939, employment trends have tended to coincide with business cycles, albeit imperfectly, declining during recessions and rising during recoveries and expansions. (See figure 1). In fact, total nonfarm payroll employment from the CES serves as a primary input for The Conference Board Coincident Economic Index.[5]

Table 3 shows business cycle turning points and corresponding turning points in nonfarm employment since 1939. For most cyclical peaks since 1939, CES employment peaked within a few months of the business cycle peak. The same is not true of the downturns coinciding with the recession of 1945 and the 1973–75 recession. However, the

decline in CES employment led the 1945 recession by 15 months, likely a result of WWII events. In contrast, CES employment lagged behind the 1973 business cycle peak by 8 months.

Table 3. Business cycle and employment turning points, 1939–2015

NBER business cycle dates		Current Employment Statistics employment turning points		Months employment turn leads or lags business cycle turn	
Peak month	Trough month	Peak month	Trough month	Months from NBER peak	Months from NBER trough
February 1945	October 1945	November 1943	September 1945	-15	-1
November 1948	October 1949	September 1948	October 1949	-2	0
July 1953	May 1954	July 1953	August 1954	0	3
August 1957	April 1958	April 1957	June 1958	-4	2
April 1960	February 1961	April 1960	February 1961	0	0
December 1969	November 1970	March 1970	November 1970	3	0
November 1973	March 1975	July 1974	April 1975	8	1
January 1980	July 1980	(1)	(1)	—	—
July 1981	November 1982	July 1981	December 1982	0	1
July 1990	March 1991	June 1990	May 1991	-1	2
March 2001	November 2001	February 2001	August 2003	-1	21
December 2007	June 2009	January 2008	February 2010	1	8

Notes:

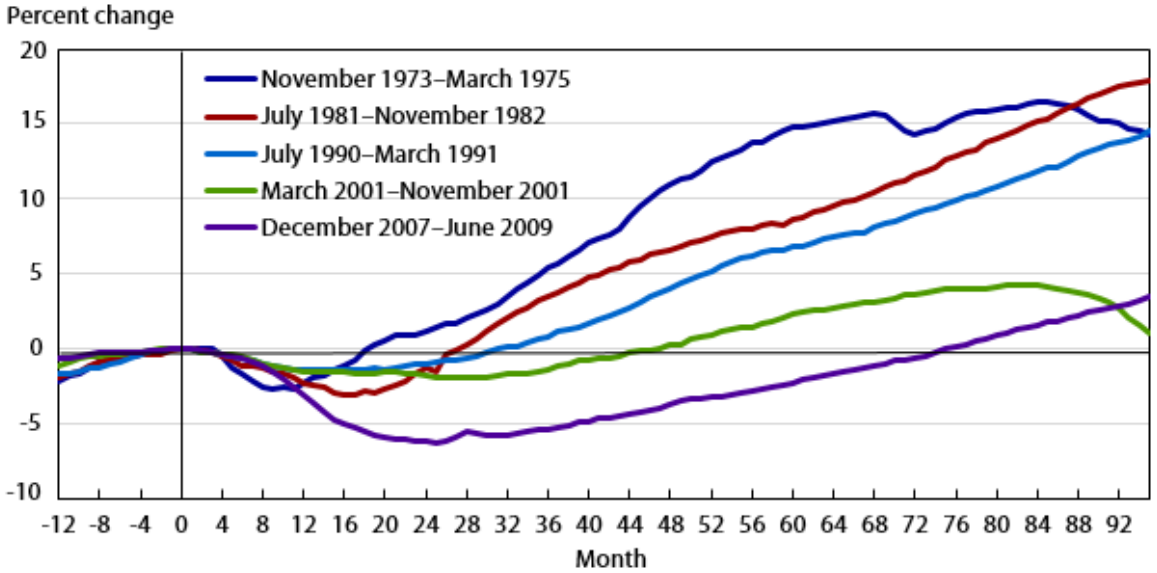
(1) No peak or trough designated because period of downturn did not meet CES criteria for peaks and troughs.

Sources: Current Employment Statistics, U.S. Bureau of Labor Statistics and National Bureau of Economic Research.

Similarly, for all but two of the recessions, the relationship between employment and economic recovery was fairly close. The 2001 recession was the first where employment had not turned up within 3 months of earlier business cycle troughs. Following the 2001 recession, employment continued to fall for nearly 2 years. Jobs losses also continued for 8 months after the 2009 recessionary trough.

The Great Recession

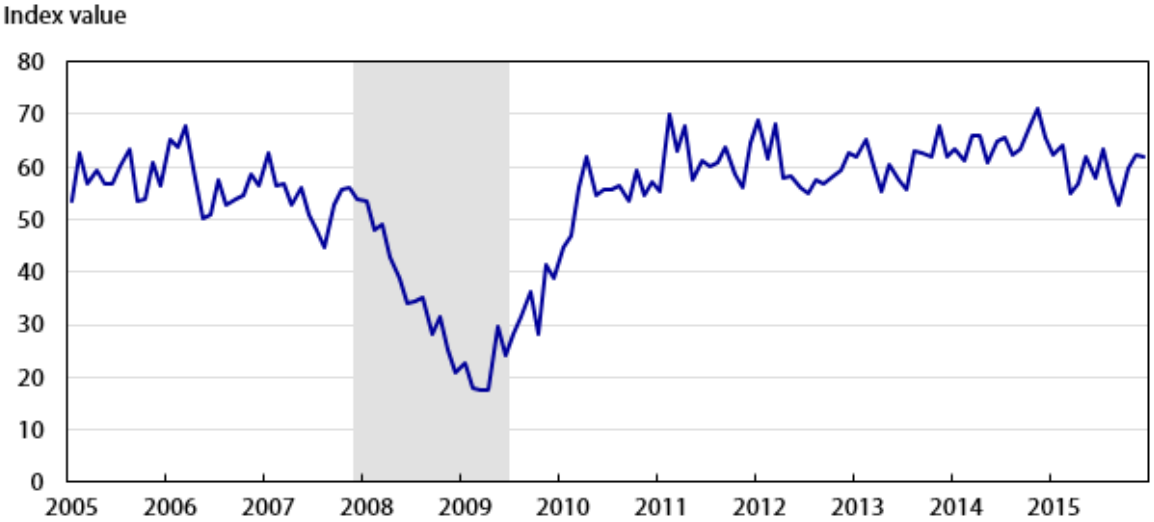
Figure 2. Total nonfarm employment, percent change from employment peak, indexed to respective employment peaks



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

The depth and breadth of employment losses during the Great Recession contrast sharply with all other recessions since 1939.[6] From its peak in January 2008 to its trough in February 2010, nonfarm employment decreased by 8.7 million, a decline of 6.3 percent. Only the job loss during WWII was greater—from November 1943 to September 1945, employment declined by 10.1 percent. Recovery was slow coming out of the Great Recession. (See figure 2.) It took 25 months to lose the jobs, and twice as long (51 months) to recover them by May 2014. This was the longest employment recovery time following any recession since 1939. The next longest recovery, often referred to as the “jobless recovery,” followed the 1990–91 recession, in which employment took 23 months to recover.

Figure 3. Total private 1-month diffusion index, seasonally adjusted, January 2005–December 2015



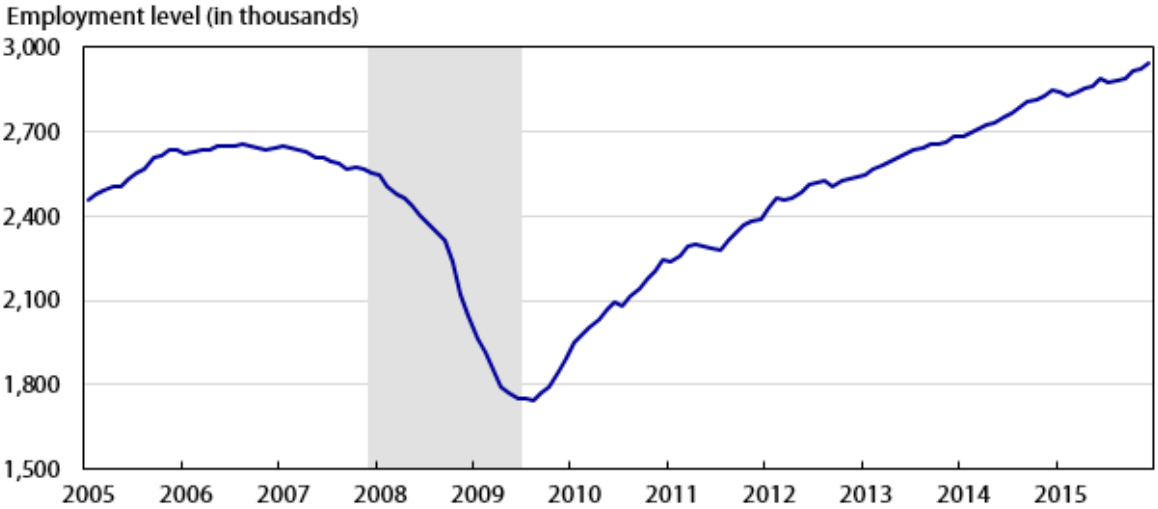
Note: Shaded area represents the 2007–09 recession as determined by the National Bureau of Economic Research.
Source: Current Employment Statistics, U.S. Bureau of Labor Statistics.

The breadth of the Great Recession also was widespread among various industries, as illustrated by the 1-month diffusion index for the private-sector industries. The diffusion index fell below 50 in February 2008, and remained below 50 through February 2010. (See figure 3.) In the diffusion index, values less than 50 indicate that more industries are losing jobs than gaining jobs; conversely, values greater than 50 indicate that more industries are gaining jobs than losing them. The index hit a trough of 17.4 in April 2009, 2 months before the recession ended.

Leading and lagging industries

Certain CES data series have been shown to lead business cycle turning points. Employment in the temporary help services industry, for example, is a leading indicator for overall employment cycles. Employment in temporary help services reached a peak in August 2006, 17 months before the peak in total nonfarm employment, and a trough in August 2009, 6 months before the trough in total nonfarm employment. As the economy weakens, businesses across all industries are often willing to shed temporary, contracted workers before their permanent employees. As such, employment in temporary help services will generally decline before total nonfarm employment. During times of recovery, businesses may purchase labor services from temporary help companies while judging the economic climate before they hire permanent employees.[7] Accordingly, temporary help services employment tends to coincide with upturns in the business cycle, but it still leads changes in overall employment. Figure 4 tracks the employment in temporary help services from 2005 through 2015.

Figure 4. Temporary help services employment, seasonally adjusted, January 2005–December 2015



Note: Shaded area represents the 2007–09 recession as determined by the National Bureau of Economic Research.
Source: Current Employment Statistics, U.S. Bureau of Labor Statistics.

Manufacturing production employees' average weekly hours also serve as a leading indicator for business cycles; this input is included in The Conference Board Leading Economic Index.[8] Average weekly hours usually decrease before the economy enters a recession because employers typically cut employees' hours before laying them off. Since 1939, the manufacturing workweek has peaked, on average, 10 months prior to the business cycle peak. (See table 4.) While it leads business cycle peaks, the manufacturing workweek is less likely to lead periods of economic recovery. For example, the workweek did not reach a trough until 20 months after the early 2000s recession ended in November 2001.

Table 4. Business cycle and manufacturing workweek turning points, 1945–2015

NBER business cycle dates		Manufacturing workweek turning points		Months manufacturing workweek turn leads/lags business cycle turn	
Peak month	Trough month	Workweek peak	Workweek trough	Number of months from NBER peak	Number of months from NBER trough
February 1945	October 1945	November 1943	May 1946	-15	7
November 1948	October 1949	December 1947	April 1949	-13	6
July 1953	May 1954	March 1953	January 1954	-4	-4
August 1957	April 1958	November 1955	February 1958	-21	-2
April 1960	February 1961	May 1959	December 1960	-11	-2
December 1969	November 1970	October 1968	December 1970	-14	1
November 1973	March 1975	March 1973	March 1975	-8	0
January 1980	July 1980	March 1979	July 1980	-10	0

See footnotes at end of table.

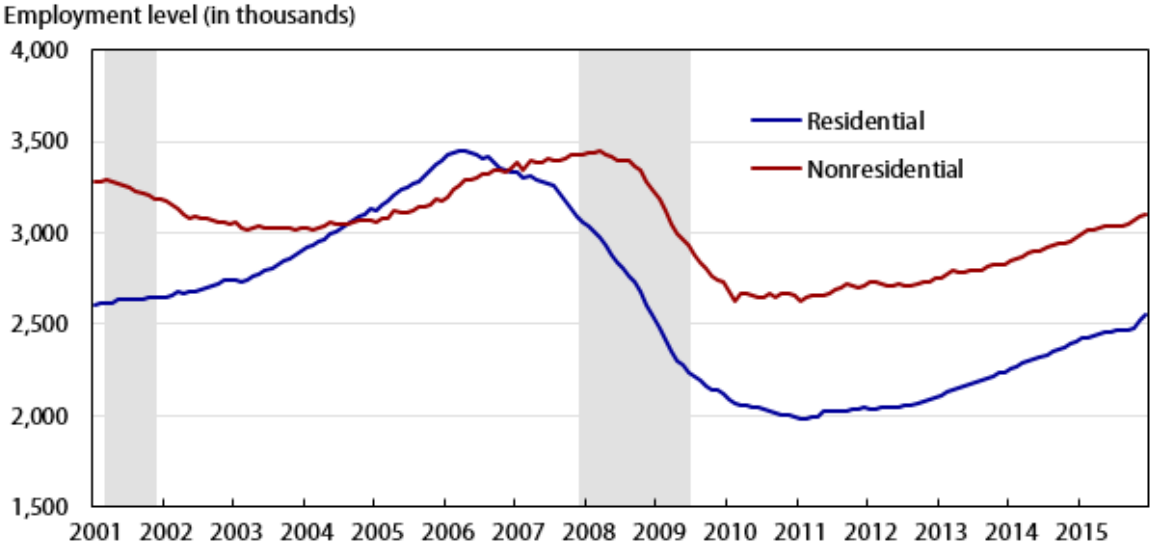
Table 4. Business cycle and manufacturing workweek turning points, 1945–2015

NBER business cycle dates		Manufacturing workweek turning points		Months manufacturing workweek turn leads/lags business cycle turn	
Peak month	Trough month	Workweek peak	Workweek trough	Number of months from NBER peak	Number of months from NBER trough
July 1981	November 1982	May 1981	January 1982	-2	-10
July 1990	March 1991	February 1989	March 1991	-17	0
March 2001	November 2001	April 2000	July 2003	-11	20
December 2007	June 2009	March 2008	May 2009	3	-1

Sources: Current Employment Statistics, U.S. Bureau of Labor Statistics and National Bureau of Economic Research.

For most industries, employment trends track business cycles; however, weakness in certain economic sectors may sometimes signal turning points. Construction serves as an interesting example: during the past 12 business cycle peaks, employment in the construction sector experienced a coincident peak in 4 instances, peaked 5 or more months prior in 6 instances, and failed to reach a proximate employment peak in the 2 remaining instances. Construction employment peaked in April 2006, 20 months before the start of the Great Recession. This change in employment trend generally tracked the U.S. housing bubble, a period during which new single-family home prices rose rapidly until peaking in 2007, then declined sharply the next several years before reaching a trough in 2011.[9] Prices have since rebounded sharply, surpassing the 2007 peak by 8.0 percent as of 2015. Residential construction exhibited an earlier lead time into the housing bust and ensuing recession than nonresidential construction; employment in residential building and residential specialty trades peaked in early 2006, while nonresidential construction employment peaked in early 2008.[10] (See figure 5.)

Figure 5. Construction employment, residential and nonresidential, seasonally adjusted, January 2001–December 2015

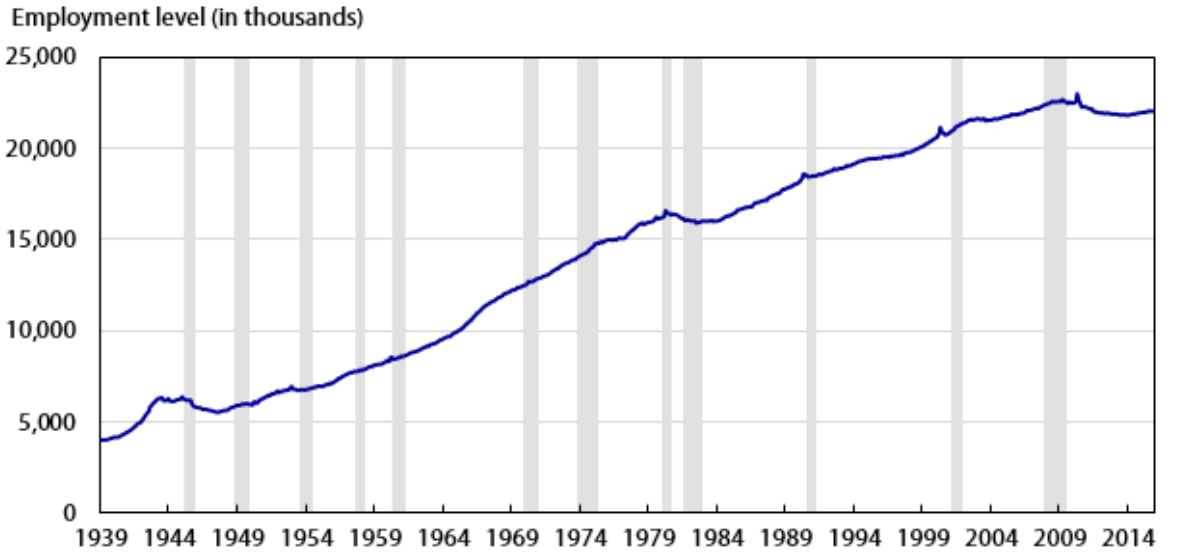


Note: Shaded areas represent recessions as determined by the National Bureau of Economic Research.
Source: Current Employment Statistics, U.S. Bureau of Labor Statistics.

Economic shocks in one industry can transfer to related industries. As the housing bubble started to have an impact on the construction industry, weakness quickly moved to financial activities; complementary industries such as mortgage finance and real estate were particularly affected. Financial activities reached an employment peak in December 2006, 13 months before total nonfarm employment peaked. Shortly thereafter, housing prices began to decline and both mortgage delinquency rates and home foreclosures increased sharply, particularly among homeowners with subprime home loans. The financial activities industry lost 718,000 jobs from December 2006 to February 2011.

The cyclical trends for government employment tend to lag business cycle changes. Government entities at the federal, state, and local levels set budgets based on estimates of future tax revenues and other income streams. As a result, expenditures, including those for hiring, are based on older economic data. When the economy weakens, tax revenues may fall short of expectations. This, in turn, could cause government entities to adjust their workforce through hiring freezes or layoffs.

Figure 6. Government employment, seasonally adjusted, January 1939–December 2015

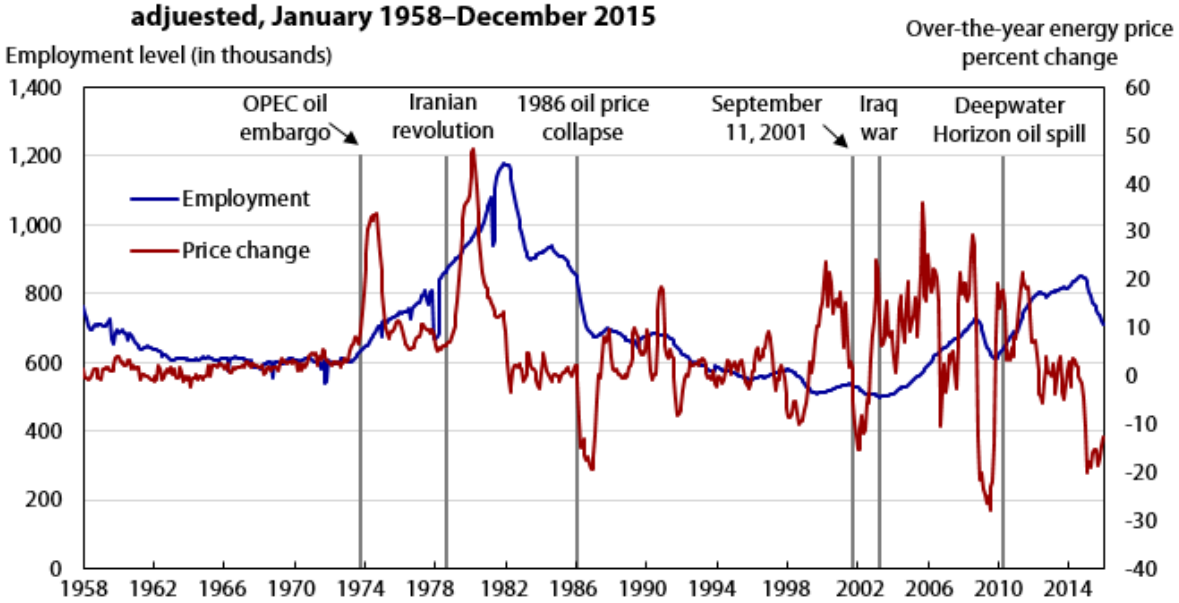


Note: Shaded areas represent recessions as determined by the National Bureau of Economic Research.
Source: Current Employment Statistics, U.S. Bureau of Labor Statistics.

Post-WWII government employment has grown more slowly or turned down following business cycle turning points.[11] During the 1980 recession (January 1980–July 1980), government employment did not peak until April 1980, 3 months after the business cycle peak. Following the start of the Great Recession, employment in government did not peak until April 2009, 16 months after the business cycle peak (See Figure 6).

Acyclical employment

Figure 7. Mining employment and over-the-year energy price percent change, seasonally adjuested, January 1958–December 2015



Source: Current Employment Statistics and Consumer Price Index, U.S. Bureau of Labor Statistics.

Employment in most industries moves with business cycles. But for two industries in particular, mining and health care, factors other than the prevailing business cycle tend to determine employment patterns. Employment in mining tends to respond to changing energy prices. Health care employment has continued on an upward trend, regardless of business cycles. The mining industry is particularly reactive to rising and falling energy prices. Since 1958, events ranging from oil embargos, unrest in oil producing countries, and terrorist attacks to natural disasters have coincided with jumps in energy prices. (See figure 7.) In 1974, a sharp spike in crude oil prices coincided with the oil embargo of 1973, which cut oil production and banned petroleum exports to the United States.[12] Mining firms responded with a rapid buildup of domestic production and employment. As energy prices spiked again in 1980 following the Iranian Revolution and strikes at Iranian oil refineries, mining employment continued to rise. When energy prices fell in the wake of the 1986 oil price collapse, and again after the early 2000s recession (March 2001–November 2001), mining employment declined. Subsequent events, including the September 11th terrorist attacks, the Iraq War, hurricanes, and a major oil spill in the Gulf of Mexico, caused energy prices to increase dramatically. With these price gains, mining employment grew rapidly, then declined sharply when prices fell.

As energy prices were rising throughout much of the last decade, domestic oil and gas producers began taking advantage of improved methods for extracting oil. The expansion of one method in particular, hydraulic fracturing (or “fracking”), allowed the United States to become “the world’s largest producer of crude oil and related field production for the first time in decades.”[13] The resulting increase in oil supply, combined with a deceleration in economic growth in China and elsewhere in the world, has led to a sharp decline in oil prices since late 2014.

Health care employment is often described as “recession proof” because it generally does not decline during economic downturns. Health care employment has grown consistently since 1958; there have been only 8 instances of over-the-month job losses, and 2 of those instances occurred as a result of strikes.[14] Previous studies have described the rate of growth in hospital employment as countercyclical: when general business conditions are weak, hospital employment tends to grow.[15] During the Great Recession, health care added 431,000 jobs, even as the economy lost 7.4 million jobs. Of the jobs added during that period, nearly a quarter (102,000) were in hospitals.

Some industries have demonstrated sharp spikes or drops in employment that quickly returned to normal. The federal government, for example, experiences a spike in employment every 10 years for the collection of the decennial census. For the 2010 Census, more than half a million temporary workers were hired to count the population; most were hired in May 2010, then laid off over the next several months.[16]

Globalization

Employment trends in the manufacturing sector reflect some of the earliest movements in the United States toward globalization, whereby U.S. firms incorporate more foreign-made goods into their final output or, in the most extreme cases, move all production to foreign soil. Manufacturing employment in the U.S. reached an alltime peak in June 1979. Since then, the long-term employment trend has been downward. According to the Bureau of Economic Analysis, manufacturing accounted for 12 percent of value-added GDP in 2014, down from 26 percent in 1947.[17]

The losses were particularly stark in apparel, which, since January 1990, has lost 86 percent of its employment. Additionally, in the second quarter of 2015, the United States imported 12 times the value of apparel goods that it exported.

Although the CES survey cannot be used to determine if jobs moved offshore or if job losses resulted from foreign competition, export and import data help explain why the manufacturing industry has shrunk since 1979. The United States currently imports more manufactured goods than it exports. On the basis of trade data from the Census Bureau, the United States experienced a positive balance of payments in net exports of goods prior to 1970, indicating more goods were exported than imported. During the 1970s the balance shifted, and in every year since 1976 the country has experienced a negative balance of payments in goods.[18]

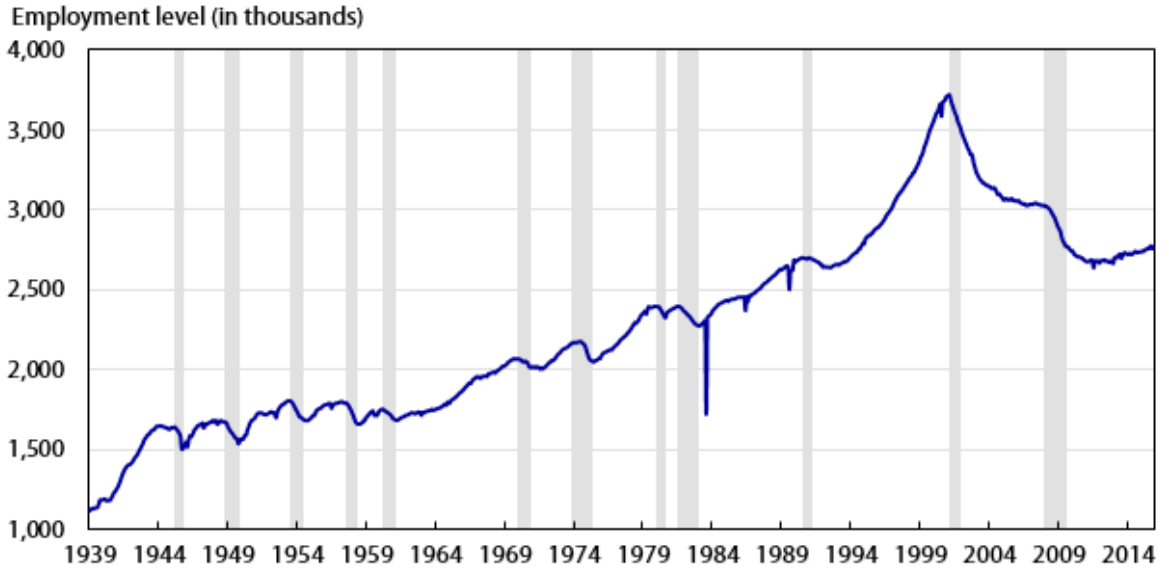
Contrasting with U.S. trade in goods, service-providing industries have seen an employment uptick that started in the 1970s. Since 1971, the United States has run a surplus in its balance of payments for services each year. But because of the trade imbalance present for goods-producing industries, the overall balance of payments has shown a deficit each year since 1976.

New and emerging industries

In addition to reacting to cyclical changes, employment trends have been affected by changing business practices. In fact, when the NAICS was initially developed in the 1990s, special attention was given to capturing such changes—the inclusion of production-oriented classifications for new and emerging industries, expanded industry detail for service providers, and efforts to identify industries that produce advanced technologies.[19] One sector met each of these NAICS criteria—the information sector.

The information sector, which includes publishers, motion picture producers, broadcasters, and telecommunication services, captures new and emerging industries, such as Internet hosting and wireless telecommunication. The sector has experienced significant structural changes with the introduction of advanced technologies, including satellites, cell phones, the Internet, and other wireless communications. The sector enjoyed steady employment growth through the 1980s; this growth accelerated during the 1990s, then entered a long-term decline after employment peaked in March 2001. (See figure 8.) This decline coincided with the collapse of the dot-com bubble.

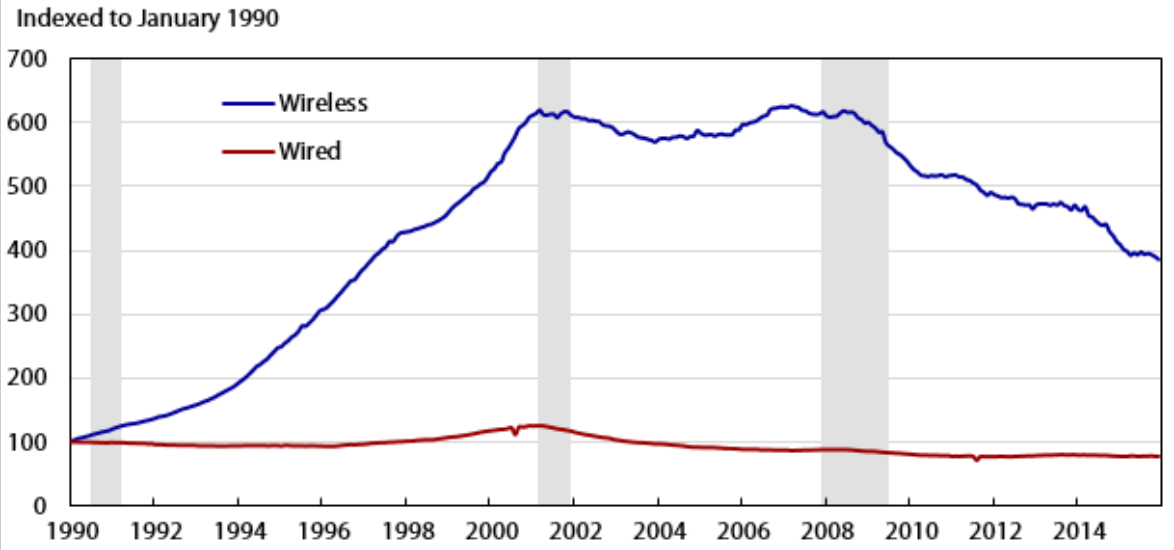
Figure 8. Information employment, seasonally adjusted, January 1939–December 2015



Note: Shaded areas represent recessions as determined by the National Bureau of Economic Research.
Source: Current Employment Statistics, U.S. Bureau of Labor Statistics.

Telecommunications is a component of the information sector that has evolved rapidly because of structural changes. Since 1990, employment in wired telecommunication has declined precipitously, while its wireless counterpart has gained jobs. This difference is largely explained by constantly improving technology and the increased popularity of cell phones and other wireless devices.

Figure 9. Telecommunications employment, seasonally adjusted, January 1990–December 2015



Note: Shaded areas represent recessions as determined by the National Bureau of Economic Research.
Source: Current Employment Statistics, U.S. Bureau of Labor Statistics.

Employment in wired telecommunications carriers peaked in December 2000 and has drifted down since then. By December 2015, the industry had lost about 371,000 jobs, or 38.7 percent of its total employment. In contrast, employment in wireless telecommunications rose rapidly during the 1990s and remained relatively flat until early in

the Great Recession, but has trended down since March 2007, with 79,000 jobs lost through December 2015. (See figure 9.) Despite these different trends, employment in wired telecommunications (589,000) was still substantially higher than in wireless telecommunications (127,000) in December 2015. Two factors help explain the higher employment in wired telecommunications: (1) many workplaces still prefer wired networks because they are more secure than their wireless counterparts, and (2) the maintenance and repair for these networks is far more labor intensive than required for wireless networks.[20]

An area that has been greatly affected by changing technology is publishing. Publishing industries have reduced employment by about 31 percent since January 2001, coinciding with a strong movement towards online, digital content and away from paper books, magazine, and newspapers. Newspapers, for instance, have significantly cut back on daily print editions.[21] In 2014, sales of e-books grew to $3.37 billion, representing a share similar to that of hardback books.[22]

Changing business paradigms

Like information, the retail sector has been greatly affected by the growth of the Internet. The transition of consumers to online shopping has affected employment in retail trade as well. Since the early 2000s, online retail sales have increased steadily and, as of the fourth quarter of 2015, made up 7.5 percent of total retail sales.[23]

Despite its small share of retail employment, recent employment trends in electronic shopping and electronic auctions illustrate the transition in consumer behavior from shopping in brick-and-mortar stores to shopping online. During the 1990s, job growth in electronic shopping and electronic auctions accelerated and, after falling during the 2001 recession, reaccelerated sharply. From December 1990 to December 2015, the industry's employment grew by more than 420 percent, while job growth was much slower in all other retail industries. (See table 5.)

Table 5. Employment and employment change, retail trade and component industries, seasonally adjusted (in thousands), 1990–2015

Industry	Employment		Employment change	
	December 1990	December 2015	Level	Percent
Retail	13,088.1	15,760.8	2,672.7	20.4
Motor vehicle and parts dealers	1,468.5	1,973.9	505.4	34.4
Furniture and home furnishings stores	420.9	467.4	46.5	11.0
Electronics and appliance stores	448.7	524.5	75.8	16.9
Building material and garden supply stores	877.0	1,258.4	381.4	43.5
Food and beverage stores	2,791.1	3,067.5	276.4	9.9
Health and personal care stores	791.9	1,033.2	241.3	30.5
Gasoline stations	904.7	915.4	10.7	1.2
Clothing and clothing accessories stores	1,291.6	1,359.1	67.5	5.2
Sporting goods, hobby, book, and music stores	465.8	628.4	162.6	34.9
Music and book stores[(1)]	139.2	119.2	-20.0	-14.4
General merchandise stores	2,478.9	3,164.4	685.5	27.7
Miscellaneous store retailers	736.9	844.3	107.4	14.6
Nonstore retailers	412.1	524.3	112.2	27.2

See footnotes at end of table.

Table 5. Employment and employment change, retail trade and component industries, seasonally adjusted (in thousands), 1990–2015

Industry	Employment		Employment change	
	December 1990	December 2015	Level	Percent
Electronic shopping and mail order houses	156.3	351.8	195.5	125.1
Electronic shopping and electronic auctions	41.3	215.3	174.0	421.3

Notes:

See footnotes at end of table.

[(1)]This is a combination of musical instruments and supplies stores, book stores, and news dealers.

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

Online shopping also has had a major impact on traditional brick-and-mortar retail stores. Employment in music and book stores has declined by nearly 15 percent since 1990. With the increased popularity of digital music, employment in traditional music stores declined substantially. Another consequence of the prevalence of online shopping is that consumers are able to search out the best deals, weakening profit margins; this, in turn, negatively affects employment in traditional retail stores.[24]

Contrasting with the negative employment impacts on brick-and-mortar stores, online shopping has positively impacted employment for couriers and messengers. From January 1990 to December 2015, the industry grew by 255,000 jobs, or 68.9 percent. The industry tempered its employment growth trend, however, by improving productivity through technology. For example, UPS enhanced its shipping technology by improving sorting and tracking capabilities and, thus, labor productivity. These improvements likely helped the company expand its annual delivery volume to 4.7 billion packages and documents in 2015.[25]

Economic shocks

While longrun employment trends are often the result of changes to the overall economy and business practices, outsized, short-term fluctuations may occur in response to unusual large-scale events or shocks.

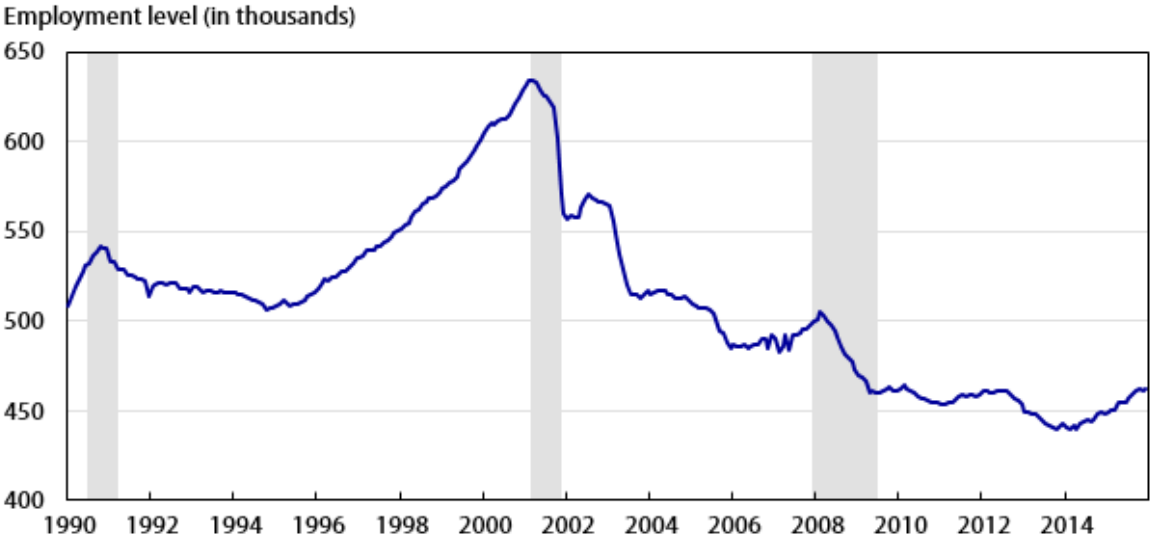
WWII caused immense employment changes in several industries. Although the CES program excludes military employment, changes in civilian jobs within the Department of Defense and other industries can still be observed. During WWII, civilian employment in the Department of Defense jumped by 868,000 from December 1941 to November 1944. In the years following the war, employment fell to prewar levels, only to spike again in the early 1950s during the Korean War.

During WWII, ship and boat building employment spiked as the military built up its fleet of warships and cargo vessels. Ship and boat building added 1.3 million jobs from January 1940 to December 1943 but shed all of the jobs gained by October 1949. Similarly, the construction sector saw an increase in employment. From January 1940 to an employment peak in July 1942, construction added 1.4 million jobs, an increase of 122 percent. The sector subsequently shed those gains by June 1944. Employment in these industries has not experienced the same sort of shocks in more recent wars.

Severe weather events can have an impact on employment and hours. The reference period for the CES survey is the pay period that includes the 12th of the month; workers receiving pay for any part of the pay period are considered employed. For severe weather to affect national employment, it must meet the following criteria: transpire around the 12th of the month, have an extended duration, and occur in either densely populated or geographically large areas. When severe weather occurs, average weekly hours often drop in industries where work is concentrated outdoors, such as construction or leisure industries. When conditions affect transportation infrastructure, they can also affect total nonfarm employment. For example, the blizzard of January 1996 coincided with a drop of 19,000 in nonfarm employment, compared with an average gain of 180,000 per month over the prior 12-month period. Employment then rebounded the following month with an increase of 432,000.

Sudden changes in demand for specific goods or services can also affect employment. For example, after the September 11th attacks, travelers became more reluctant to fly, which caused a significant reduction in demand for air travel.[26] Employment in air transportation dropped sharply in the 3 months following September 2001; job losses totaled 59,000, a 9.6-percent decline. Prior to the attacks, the industry had experienced steady job growth that started in the mid-1990s. After the attacks, employment in air transportation continued to fall and, despite an upward trend in 2015, remains about 25 percent below its September 2001 level. (See figure 10.)

Figure 10. Air transportation employment, seasonally adjusted, January 1990–December 2015



Note: Shaded areas represent recessions as determined by the National Bureau of Economic Research.
Source: Current Employment Statistics, U.S. Bureau of Labor Statistics.

Strikes typically have a negative impact on employment. The CES survey measures the number of people on payrolls—that is, those actually getting paid for work or for leave that occurred during the reference pay period. Thus, people on strike for the entire period are not counted as employed, because they are not on the payroll. When workers strike, employment falls in the strikers' industry. After the strike is resolved and employees return to work, employment rebounds. For example, 640,000 workers went on strike against AT&T from August 7, 1983 to August 28, 1983.[27] During the strike, employment in the communications industry fell by 648,000 in August; it rebounded by the same amount in September. Table 6 shows strikes that affected employment by 100,000 or more.[28]

Table 6. Strikes affecting Current Employment Statistics (CES) employment data by more than 100,000, 1975–2015

Date	Industry (Standard Industrial Classification)	Effect on CES employment
December 1977	Coal mining (12)	160,000
January 1978	Coal mining (12)	160,000
July 1980	General building contractors: residential buildings (15)	105,000
April 1981	Coal mining (12)	160,000

See footnotes at end of table.

Table 6. Strikes affecting Current Employment Statistics (CES) employment data by more than 100,000, 1975–2015

Date	Industry (Standard Industrial Classification)	Effect on CES employment
May 1981	Coal mining (12)	162,000
August 1983	Telephone communications—AT&T (481)	640,000
August 1989	Telephone communications (481); electrical apparatus and equipment, wiring supplies, and construction materials (5063); computer processing and data preparation and processing services (7374)	125,000
August 1997	Trucking and courier services, except air—United Parcel Service (421)	185,000

Notes: These strikes are based on Standard Industrial Classification system (SIC) data. When CES converted from SIC to the North American Industry Classification System, telecommunications was reconstructed back to 1990.

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

Employment as it relates to the economy

BLS publishes its monthly Employment Situation news release typically on the first Friday following the reference month. The news release contains detailed national employment, hours, and earnings data from the CES survey, along with the unemployment rate and labor force statistics from the Current Population Survey. Data from the CES survey serve as indicators of current economic trends in the United States and, therefore, rank high among the most widely watched economic statistical series in the county and around the globe.

Conclusion

Over the 100 years since CES began collecting data from a handful of manufacturing industries, the U.S. economy has experienced substantial transformations. Some of these transformations have caused significant trend changes for certain sectors of the economy. From January 1939 to December 2015, one sector lost jobs, others experienced substantial growth, and still others simply kept pace with total nonfarm employment growth over the period.

SUGGESTED CITATION

Lyda Ghanbari and Michael D. McCall, "Current Employment Statistics survey: 100 years of employment, hours, and earnings," *Monthly Labor Review,* U.S. Bureau of Labor Statistics, August 2016, https://doi.org/10.21916/mlr.2016.38.

NOTES

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4 For a comprehensive list of the U.S. business cycle expansions and contractions, see http://www.nber.org/cycles.html.

5 For a comprehensive list of inputs for the Conference Board Coincident Economic Index, see https://www.conference-board.org/pdf_free/press/US%20LEI%20-%20Tech%20Notes%2082015.pdf.

6 Monthly employment data are not available for the period of the Great Depression, which persisted for 43 months from August 1929 to March 1933.

7 Temporary help service establishments provide workers to all industries, but the CES survey does not track where employees are ultimately placed. As a result, CES data do not show how employment in individual industries is affected by labor contracted from temporary help firms.

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