

An analysis of the new job openings and labor turnover data by size of firm

The U.S. Bureau of Labor Statistics (BLS) Job Openings and Labor Turnover Survey (JOLTS) collects data for job openings, hires, and separations from sampled establishments. These data are published by industry each month. In September 2018, these data were published in a new format: size of firm. This article first provides background information needed for understanding what firm-based data mean and then explores the new data series. Next, this article compares the new firm size data with the previously published establishment-based data. Last, the JOLTS firm size data are compared with the firm size data produced by the Business Employment Dynamics program, also at BLS.

Businesses come in all sizes, from the smallest, with only one employee, to the largest multilocation business, with hundreds of thousands of employees. Each business contributes to the U.S. labor market in its own way, whether by fulfilling the American dream of business ownership or providing job security and benefits to its employees. Data from the Job Openings and Labor Turnover Survey

(JOLTS) at the U.S. Bureau of Labor Statistics (BLS) have been used to produce two sets of size class estimates: establishment based and firm based. These data series can answer questions such as whether the size of the business affects patterns of posting and filling job openings, whether different-sized businesses manage labor in different ways using hires and layoffs, and whether employees join or separate differently at businesses of different sizes. The JOLTS program has received regular requests for size class estimates from economic organizations, media, government agencies, and universities.

This article profiles the recently released JOLTS experimental firm-based size class estimates in the context of business and worker behaviors over the business cycle. This article also compares these firm-based estimates with the JOLTS establishment-based size class estimates and also with the Business Employment Dynamics (BED) size class estimates (also produced by BLS).



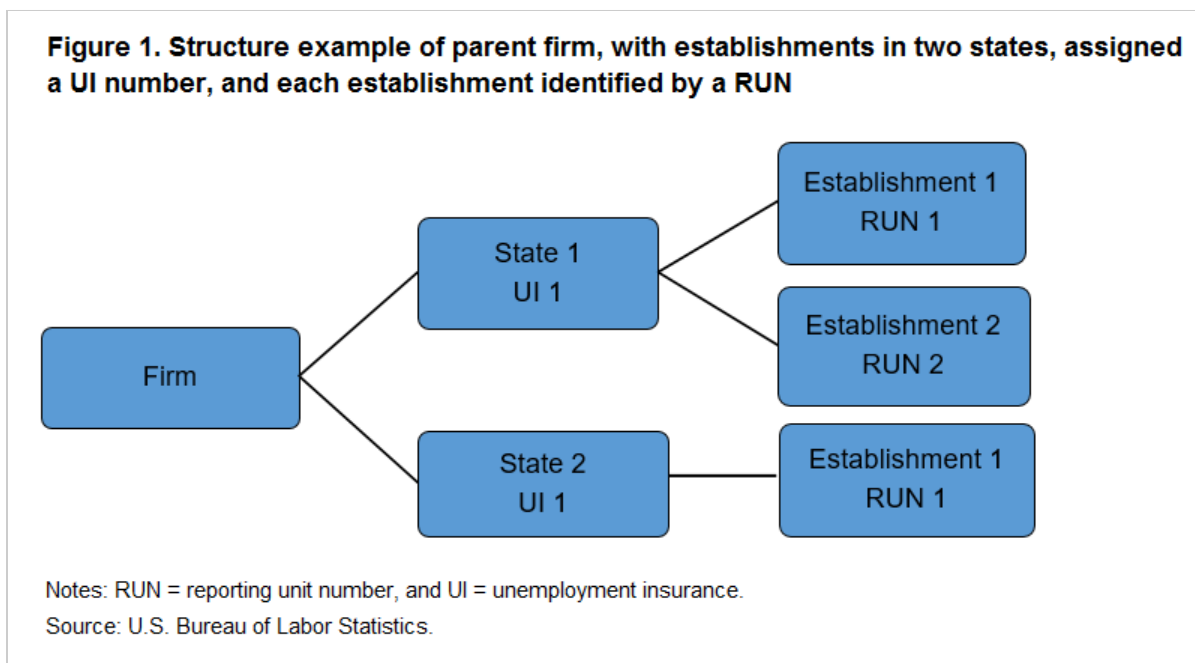
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Single establishments and multiple-establishment firms

Before we explore the firm size estimates, we need to review some terminology. An “establishment” is a single business entity residing at a specific geographic location. Because JOLTS samples and collects data from establishments, we are able to easily calculate establishment-based size class estimates. But many establishments are part of a larger entity called a “firm” or an even larger entity called an “enterprise.” An establishment can be a stand-alone store, such as a “mom-and-pop” store, or it can be one location of a chain. For example, a hotel chain can be nationwide and is identified by an employer identification number (EIN) issued by the U.S. Internal Revenue Service. Each of the chain’s hotels in a given state typically has the same state-assigned unemployment insurance (UI) number, with each individual worksite within the hotel chain further identified by a reporting unit number (RUN). With this identification structure, establishments can be linked to their parent UI account, and UI accounts can be linked to their parent firm. (See figure 1.) JOLTS uses this structure to group establishments to their parent firm (EIN) to produce firm-based size class estimates.



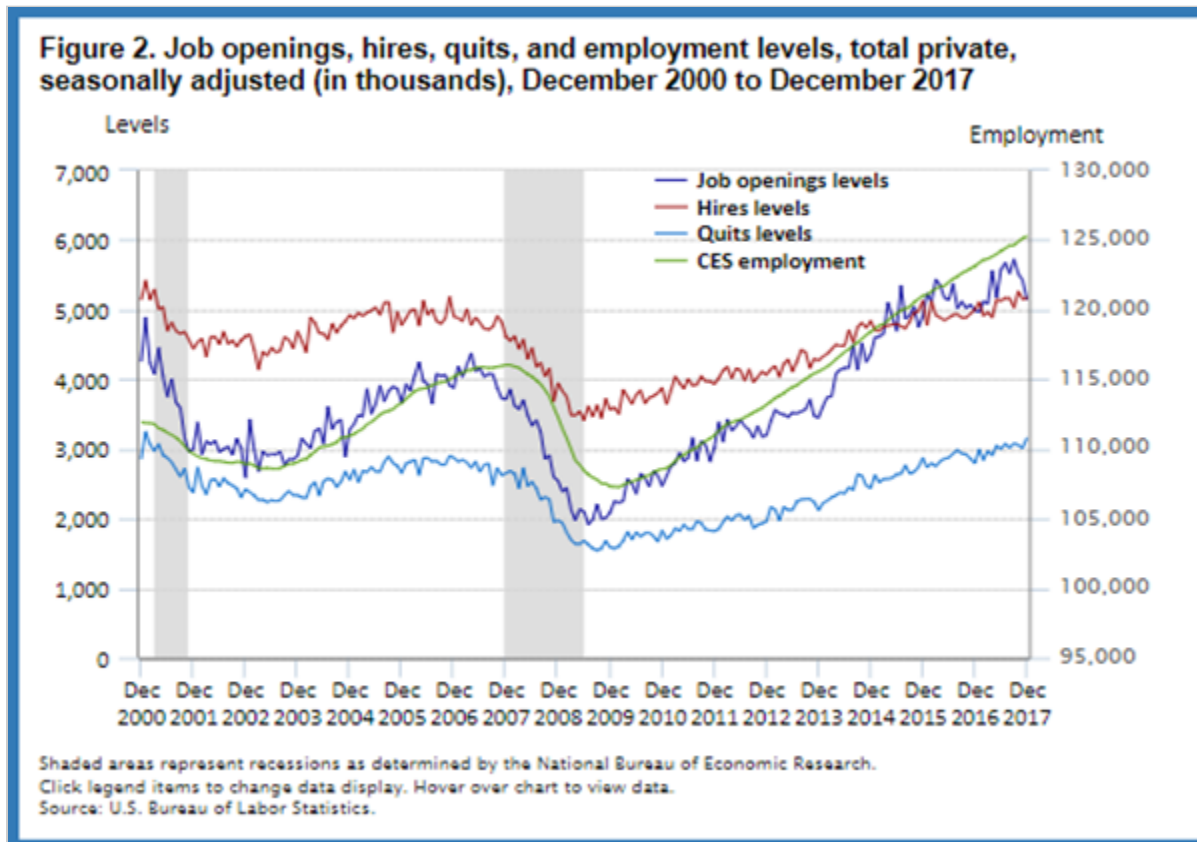
Firms with more than one establishment, such as a nationwide hotel brand, may make important decisions at the firm level. Although turnover occurs at the establishment level as employees accept employment offers or quit their jobs, the firm level may be where decisions occur about whether or not to post new positions, backfill vacated jobs, lay off workers, or close locations.

Consider a small establishment with 10 employees. If it is a stand-alone business and the business cycle softens, there are limited options at the establishment level—borrowing money, laying off workers, or the owner going unpaid. But an establishment of the same size that is part of a larger firm may have more options, such as transferring employees to other better performing locations or receiving infusions of cash from other parts of the firm to keep it afloat until the business cycle improves. One can reasonably expect that job openings, hires, and separations for these two same-sized establishments might be different if one belongs to a larger firm and one does not. These two sets of size class data let us explore these questions.

Current measure of the economy

The BED, another BLS program as just mentioned, provides measures of employment by size of establishment and firm. However, the BED program uses a large-scale business universe to produce statistics. Because the BED uses a universe, the program produces very detailed data by industry, geography, and size class. The downside is that because the universe list takes time to compile, the statistics are produced quarterly for past reference periods on a lag. The JOLTS program, however, is a monthly survey and, as such, can produce these size class statistics monthly.

Although the level of detail is not the same as that of the BED because of being a small sample, the JOLTS data represent the current economy, including changes that predate turning points in the business cycle. Before the Great Recession of 2007–09, the job openings peaked in April 2007, hires in September 2005, and quits in November 2006, each many months before the declared beginning of the recession. Employment, measured by the Current Employment Statistics program at BLS, continued to rise until the beginning of the recession. (See figure 2.)



Size classes and published data

Size class measurement methods are complicated. For many years, BLS has investigated alternative methods for calculating data by employment size. A February 2006 *Monthly Labor Review* article by Shail J. Butani and colleagues introduces the different sizing methodologies rather well,^[1] and another *Monthly Labor Review* article from March 2007 by Jessica Helfand and colleagues discusses in detail how firms of different sizes changed

throughout the business cycle.[2] In a more recent article, Katherine Bauer Klemmer explores the early firm-based size class data produced by JOLTS.[3] In addition, an interesting article by Brian Headd discusses how employees of small businesses differ from those of larger businesses.[4]

Both the JOLTS establishment-based size class estimates published since 2010 and the JOLTS firm-based size class estimates published for the first time in 2017 provide estimates of job openings, hires, and separations for the private sector, beginning with December 2000. Both the establishment and firm size series are classified as experimental. Note that neither series provides size class data by industry because of sample-size constraints.

In the published establishment-based size class estimates, the size classes are 1–9 employees, 10–49 employees, 50–249 employees, 250–999 employees, 1,000–4,999 employees, and 5,000-plus employees.[5] These experimental data are updated quarterly and are available upon request from the JOLTS program.[6] The methodology statement is posted on the JOLTS webpage.[7]

In the newly published firm-based size class estimates, the size classes are slightly different: 1–49 employees, 50–499 employees, and 500-plus employees. The 50–499 size class overlaps two of the JOLTS size classes used for sampling, but these breaks were created to match the breaks used by the BED program, creating uniformity across BLS data series. The firm size methodology and data are available on the JOLTS webpage.[8]

To allow for comparison of establishment and firm size class estimates in this article, the JOLTS program retabulated the establishment size data through 2016 using the firm size breaks. For convenience, these sizes will be referred to as small (1–49 employees), medium (50–499 employees), and large (500-plus employees) in this article.

Employer and employee actions

Both sets (establishment and firm) of JOLTS size class data provide series for job openings, hires, quits, layoffs and discharges, other separations, and total separations (the sum of quits, layoffs and discharges, and other separations).[9] Job openings, hires, and layoffs and discharges reflect the firm anticipation of and reaction to changes in the business cycle. The business decides whether to post openings, to hire new workers or replace separated workers, and to lay off workers. The one caveat is that for a hire to occur, both the employer and the employee must act. That is, although the firm decides whether to extend a job offer, a hire occurs only if the applicant accepts the offer. In this article, hires are considered to be employer actions.

JOLTS data items that reflect the employees' actions are quits and other separations. The employees decide whether changing jobs, leaving the labor market, or retiring is in their best interest. The other separations data item is a mixture of actions. This data item includes separations that are due to retirement (typically employee activated), transfers to other locations of the same business (employer activated), and separations because of disability or death (neither employee nor employer activated). Therefore, the other separations data reflect both the firm's thinking and the employee's thinking and will be analyzed in its own section.

JOLTS firm-based size class data

Data from the Quarterly Census of Employment and Wages (QCEW) at BLS show that the distribution of firms by size is quite steady over time, with just under half of firms employing 500 or more employees and the remaining portion of employment split fairly evenly between small- and medium-sized firms.[10] In 2001, the beginning of the

JOLTS firm-based time series, the portions were 29-percent small firms, 26-percent medium firms, and 45-percent large firms. By 2017, the current end of the JOLTS firm-based time series, the distribution was similar with 28-percent small firms, 25-percent medium firms, and 47-percent large firms. (See table 1.)

Table 1. Distribution of employment by firm size, Quarterly Census of Employment and Wages, 2001 and 2017

Firm size	2001		2017	
	Average employment	Percent of total employment	Average employment	Percent of total employment
Small (1–49 employees)	31,563	29	33,464	28
Medium (50–499 employees)	28,227	26	30,259	25
Large (500+ employees)	48,866	45	56,412	47
All establishments	108,656	100	120,135	100

Source: U.S. Bureau of Labor Statistics.

Employer actions at firms

Here, we look at the employer-action data items: job openings, hires, and layoffs and discharges. For job openings, we see that throughout the time series, the largest firms posted considerably more job openings than the small- and medium-sized firms. (See figures 3a–e and 4a–e at the end of this article.) Before the start of the 2007–09 recession, firms of all sizes reduced job openings, but the job openings at the largest firms peaked in December 2006, followed by medium firms in April 2007 and by small firms in September 2007. During the recession, all sizes of firms steeply cut job openings. In addition, they all hit their end-of-recession trough within a few months of each other, with medium and large firms hitting their turning point in April 2009. Postrecession, the largest firms showed the strongest recovery, surpassing prerecession levels of job postings by mid-2014. Small and medium firms also recovered postrecession, but more slowly, and capped job openings at just slightly above prerecession peak levels. The postrecession surge in job openings at the largest firms indicates that larger firms had more confidence and could immediately resume expansion efforts once the recession ended. The small and medium firms were more cautious in their expansion, increasing job openings much more slowly. In 2016, all sizes of firms leveled off the number of job openings, but increased job openings modestly in 2017. The job openings rates, as given in figure 4a, show the same trends, but with a smaller gap between the job openings rates of large firms and those rates of small and medium firms.

As figure 3b shows, the firm-based hires data are slightly different from the job openings data. The largest firms again had the most hires, steepest recessionary decline, and strongest postrecession recovery. However, opposite of job openings, the small and medium firms cut hiring well before the largest firms did before the 2007–09 recession. Hires peaked in August 2005 in small firms, in September 2005 in medium firms, and not until November 2006 in large firms. In addition, unlike job openings, hires at medium-sized firms diverged from those of small firms in the second half of the recession, falling even further. Postrecession, the number of hires again converged for small and medium firms.

Different from firm-based job openings rates, the hires rates reverse the size classes with lower rates (rather than higher) for the largest firms for about three-fourths of the time series. (See figure 4b.) All firm sizes experienced a deep drop in the hires rate during the 2007–09 recession, but the hires rate at medium and large firms declined until the end of the recession, whereas hires rates at small firms stabilized mid-recession. Postrecession, the medium and large firms' hires rates began trending back up. The small firms' hires rates, however, flattened and then began trending downward from 2010 through the first quarter 2014. All firm sizes stabilized hiring rates by the second half of 2014. The smallest firms' hires rate was more volatile—it declined in the second half of 2016 before recovering again in the first half of 2017 and then declined again at the end of 2017.

Looking at the job openings and hires rates together, we see that although large firms had the highest job openings rate, they had the lowest hires rate for most of the series. In addition, the smallest firms did not experience as much decline in their hiring rates as larger firms, so although small firms cut postings of new jobs during the recession, their hiring rate did not decline as steeply.

The layoffs and discharges data show us how firms manage downturns. Although the largest firms had the most layoffs, they had the lowest rate for the full series. As the 2007–09 recession approached, the smallest and largest firms increased layoffs after December 2005 and January 2006, respectively. Medium firms increased layoffs after September 2006. (See figures 3c and 4c.) Once the recession began, large firms immediately increased layoffs, whereas small firms increased layoffs again after April 2008 and medium firms increased layoffs after June 2008. The layoffs rates show that the largest firms' layoffs did not spike as high as the smaller firm's layoffs. Despite the different timing for increasing layoffs, layoffs peaked at firms of all sizes about three-fourths of the way through the recession, after which point they quickly decreased. After the recession, layoffs in all sizes of firms oscillated. The largest firms again increased layoffs after October 2010 until May 2015, decreased until August 2016, and then increased again. Small firms decreased layoffs until June 2014 before raising and lowering layoffs through 2017. Medium firms held layoffs relatively steady overall from 2010 onward, with some oscillation.

Employee actions at firms

The quits data element reflects employee-initiated action. As figure 3d (at the end of this article) shows, the quits levels moved similarly to the hires levels, with the largest firms having the most quits, steepest decline, and strongest recovery. Also similar to hires levels, quits peaked first in medium firms (February 2006), then in small firms (May 2006), and then in large firms nearly a year later (March 2007). Quits levels at small and medium firms moved almost identically during the recession rather than diverging as they did with hires. The quits rates, shown in figure 4d (at the end of this article), are similar to the hires rates before the recession, with largest firms having the lowest rate and small and medium firms quite close to each other. Unlike hires rates, though, the quits rates converged for all sized firms before the recession and stayed extremely close until fourth quarter 2013 when the small firms' quits rate began to lag a bit. Since mid-2016, quits rates at small firms fell behind a little more. The convergence of the quits rates tells us that, heading into, throughout, and following the recession, a smaller portion of employees of any size firm was willing to risk quitting their jobs to change jobs or to leave the workforce.

Other separations at firms

The other separations data element of JOLTS is often overlooked because the number of other separations is quite small compared with quits and with layoffs and discharges. But this data item is important since it includes, among other things, retirements and transfers between locations of the same business. Retirement is an extremely

important milestone for most employees, and transfers between locations can be a useful management tool for multilocation firms. Larger firms are more likely to offer retirement benefits,^[11] and they are much more likely to have multiple locations to shift employees among.

The JOLTS firm size data support these factors with double the number of other separations at the largest firms. (See figure 3e at the end of this article.) Other separations peaked in June 2006 for large firms and in July 2006 for small and medium firms, well before the 2007–09 recession began. However, as the recession approached, other separations declined, perhaps reflecting hesitancy of workers at any size firm to retire as the economy softened. Other separations declined slightly for all firm sizes during both the 2001–03 and 2007–09 recessions. Once the 2007–09 recession passed, other separations increased steadily at large firms until November 2013 and then declined and rose twice more by the end of 2017. The level of other separations did not change much over time in small and medium firms, although some oscillation occurred after the recession.

Because smaller firms are less likely to offer retirement benefits and are less likely to have multiple locations to transfer among, the change in the business cycle regarding other separations did not affect workers as much at the smaller firms. The other separations rates, as shown in figure 4e (at the end of this article), have a small range, but the trends in the rates match those in the levels, especially the widening of the gap between the rates of other separations of employees at large firms in 2013 onward and those rates at small or medium firms.

The JOLTS firm-based size class data show that the largest firms readily altered job postings and layoffs as needed throughout the business cycle and had a harder time filling positions for most of the time series than the smaller firms. Employees seemed to be equal-opportunity quitters from firms of all sizes, quitting at similar rates heading into, throughout, and leaving the 2007–09 recession. For retirements and transfers, we see that employees had more opportunity for retirement and transfers at the largest firms.

Leading indicators

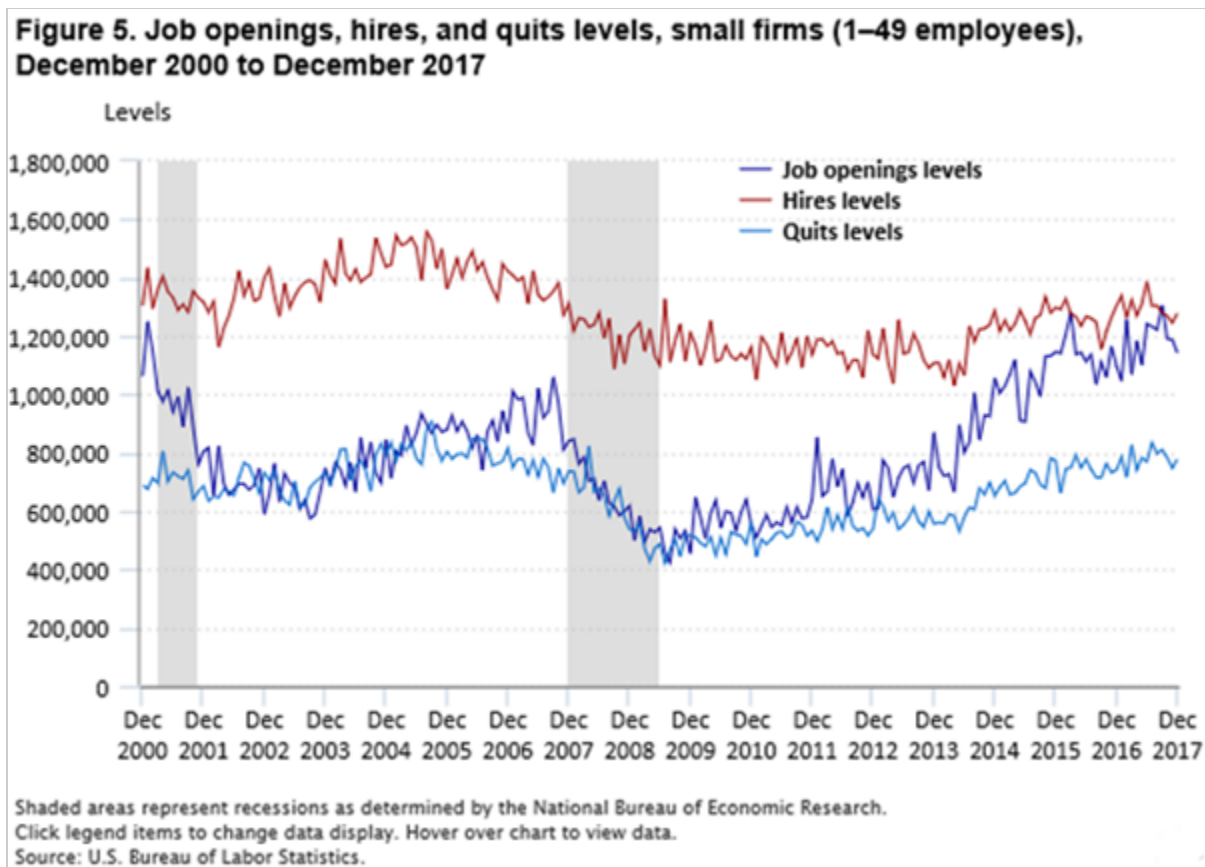
The job openings, hires, and quits data series are potentially leading indicators going into a recession. As we saw in figure 2 earlier, the downward trends in these data series at the total nonfarm and total private levels began well before the onset of the 2007–09 recession. However, the turning points are different for the different firm sizes. For job openings, the largest firms held job openings steady at the beginning of 2006, peaked job openings in December 2006, and then decreased job openings through most of the recession. (See figure 3a at the end of this article.) The medium firms, however, peaked job openings in April 2007, and small firms kept increasing job openings, peaking in September 2007, just 3 months before the recession began. Given the different timing of the peaks, the more specific leading indicator of the 2007–09 downturn was the level of job openings at large firms.

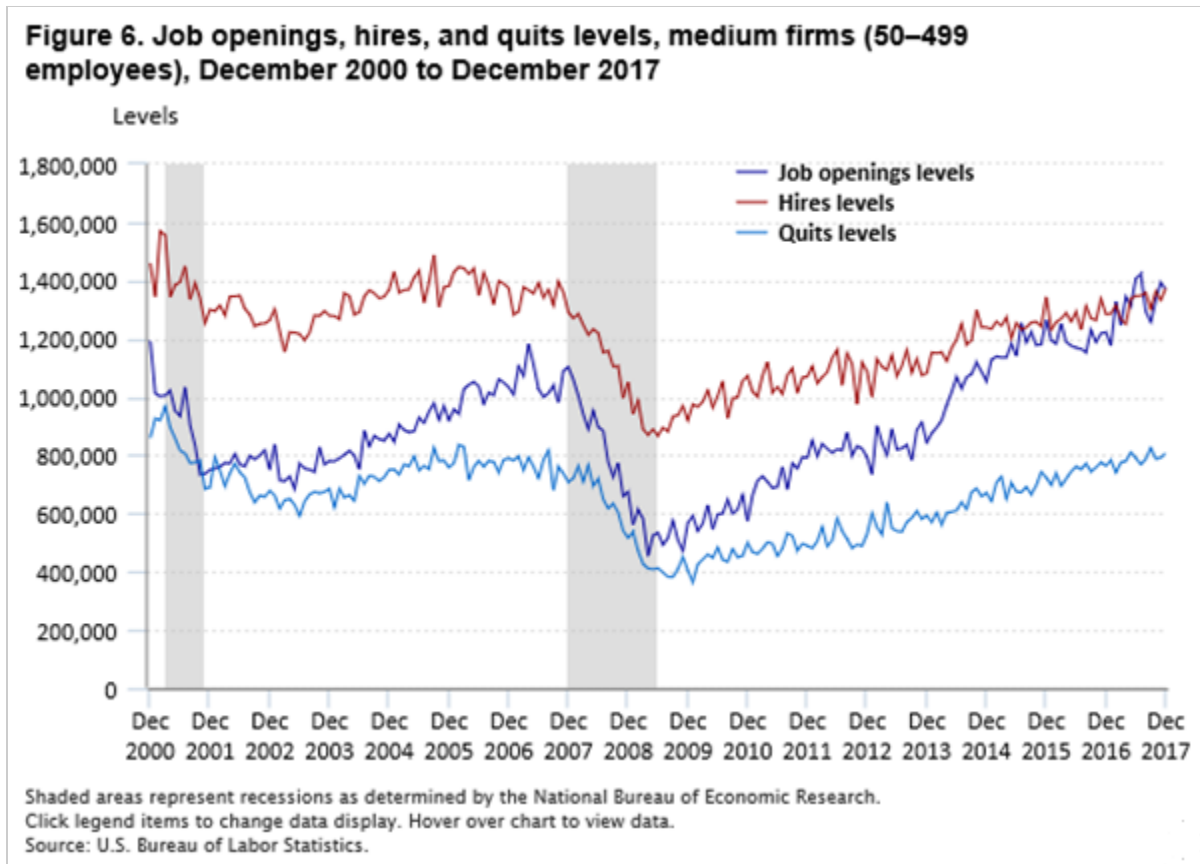
Hires, however, moved in the opposite direction, with small and medium firms decreasing their hires at the beginning of 2006, while large firms did not decrease hiring until the end of 2006. (See figure 3b at the end of this article.) The employee quits patterns match those of hires, with employee quits declining sooner at small and medium firms than at large firms. (See figure 3d at the end of this article.) Therefore, the more specific leading indicators of the 2007–09 downturn were the hires and quits at small and medium firms.

Job openings, hires, and quits in each firm size class

Comparing data across firm size classes reveals a number of interesting findings. But looking at each size class by itself is informative too. In particular, how do job openings, hires, and quits—the three potential leading indicators—move relative to each other within firms of the same size class?

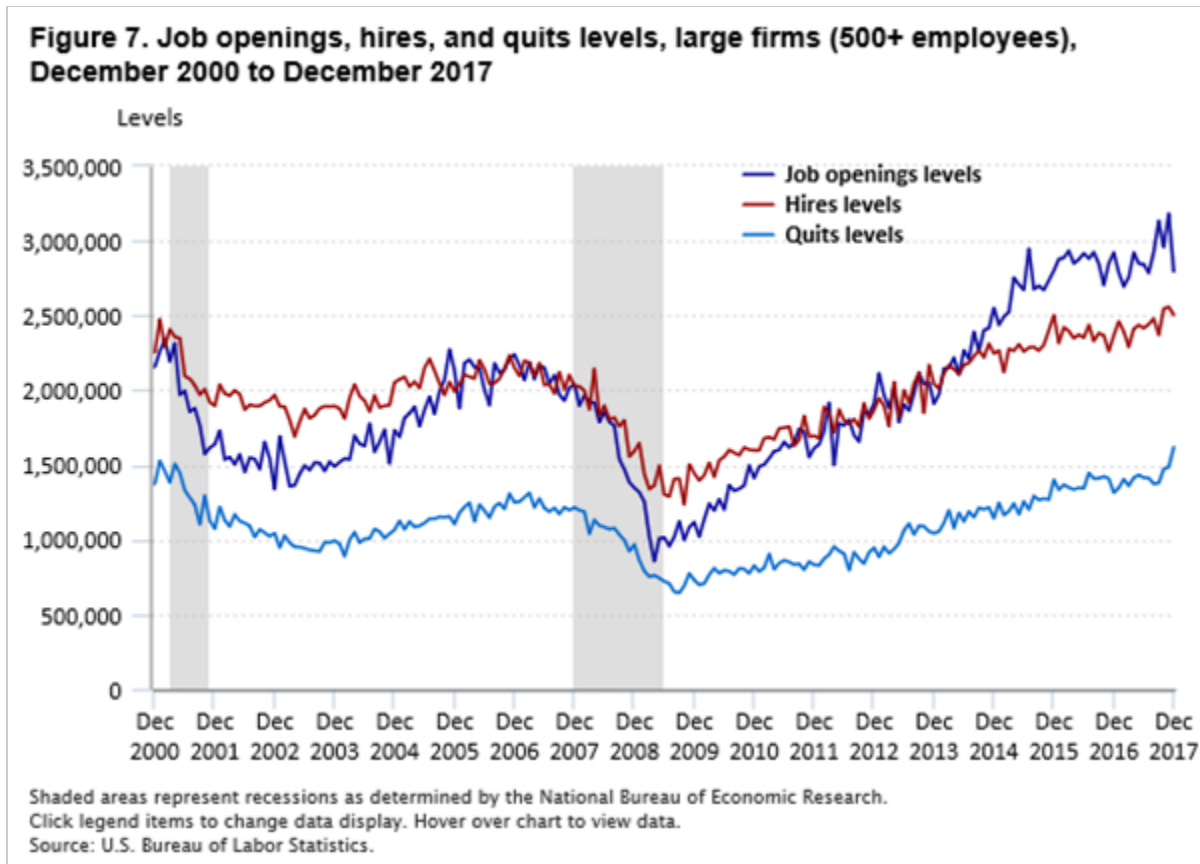
Before the 2007–09 recession, small and medium firms exhibited the same trends—job openings and quits moved together while hires moved in the opposite direction. (See figures 5 and 6.) Hires and quits peaked about the same time while job openings continued to increase until just before the recession. It makes sense that hires would decline as quits declined since less replacement hiring was occurring. And it makes sense that job openings would increase as hires decreased, but only to a point. If workers quit less often, fewer jobs would need to be filled. Yet, the number of job openings kept rising.





Postrecession, small and medium firms behaved somewhat differently. Small firms kept hiring flat through 2010, whereas medium firms increased hiring as soon as the recession ended. Quits began to trend up in both small and medium firms soon after the recession ended. Job openings differed between small and medium firms as well. Openings at small firms remained flat postrecession through 2010 before rising. At medium firms, job openings rose steeply as soon as the recession ended. In both small and medium firms, the number of hires remained above the number of job openings for the full series, although by the end of 2016, job openings and hires were close to each other in small firms. In medium firms, the hires and job openings converged sooner—by mid-2015.

Large firms have a different pattern, as figure 7 shows, with job openings, hires, and quits moving together before the 2007–09 recession, although job openings and hires peaked a few months sooner than quits. Postrecession, all three data series increased. However, unlike small and medium firms, large firms saw their number of job openings catch up with the number of hires by the end of 2011 and then surpass the hires by the end of 2014. Therefore, when we see job openings outnumbering hires at the total nonfarm and total private level, the largest firms are driving this phenomenon.



Establishment-based versus firm-based size class estimates

The JOLTS establishment-based size class data assign the employment size class on the basis of the employment at the individual business establishment locations rather than the employment at the whole firm. How do firm-based size class estimates compare with establishment-based size class estimates? Do they explain the U.S. labor market in different ways? Does being part of a larger firm change how businesses of different sizes manage their labor?

We saw earlier from the QCEW data that the distribution of employment by firm size class was fairly steady over time, with just under half of firms employing 500 or more employees.^[12] The QCEW data show that the distribution of employment by establishment size class is also fairly steady over time. Looking again at 2001 and 2017 (the beginning and end of the firm size series), in March 2001, we find that 43 percent of employees were at small establishments, 39 percent at medium, and 19 percent at large. By March 2017, the distributions were 44 percent small firms, 39 percent medium firms, and 17 percent large firms. (See table 2.)

Table 2. Distribution of employment by establishment size, Quarterly Census of Employment and Wages, March 2001 and March 2017

Establishment size	March 2001		March 2017	
	Employment	Percent of employment	Employment	Percent of employment
Small (1–49 employees)	45,212,370	43	52,877,193	44
Medium (50–499 employees)	43,092,892	39	46,820,063	39
Large (500+ employees)	20,627,542	19	20,741,532	17
All establishments	108,932,804	100	120,438,788	100

Note: Quarterly Census of Employment and Wages establishment employment data are available only for January, February, and March of each year.

Source: U.S. Bureau of Labor Statistics.

First, we compare job openings. The establishment-based data show, as depicted in table 2, that most job openings were at establishments with fewer than 500 employees, primarily reflecting that over 80 percent of employment were at small and medium establishments. Figure 8a (at the end of this article) shows that, together, small and medium establishments posted about four times as many job openings as large establishments. Grouping those establishments by firms shows that many small- and medium-sized establishments belonged to a larger entity, causing large firms to have the most job openings. Next, we look at hires, quits, layoffs and discharges, and other separations and see the same pattern (see figures 8b–8e at the end of this article). That is, when we consider individual establishments, figures 8b and 8e reveal that the small- and medium-sized establishments had the most hires and other separations. However, once the establishments are grouped by firm, the largest firms had the most hires and separations.

Whether one uses establishment-based or firm-based estimates, the movement of the rates is very similar over time, although the rates are much closer together when the firms are grouped by size. From figures 9a–9d (at the end of this article), we see that the largest establishments and firms had the highest rate of job openings but had mostly lower rates of hires, quits, and layoffs and discharges.

The main difference in hires rates between establishments and firms is that by 2013, the largest firms had a higher hires rate than that of small and medium firms. In the establishment data, the hires rate at the largest establishments remained below smaller establishments. (See figure 9b.) This difference shows that when an establishment is part of a larger firm, more hiring (as a portion of employment) occurs.

In general, the quits rates trend the same between the establishment and firm series, but large firms have higher quits rates than large establishments. The establishment data shown in figure 9d indicate that employees were more likely to quit their jobs if they worked at a small- or medium-sized location. However, many of those establishments were part of a larger entity, so when we grouped them within their parent firm, the proportion of quits at the larger firm size increased. The end result is that since 2006, employees quit their jobs at basically the same rate regardless of the size of the firm.

As the layoffs and discharges data show in figure 8c, large establishments had considerably fewer layoffs but large firms had considerably more layoffs (December 2000–16). The layoffs and discharges rates in figure 9c, however, reveal a different finding between establishments and firms. The largest establishments and the largest firms had the lowest layoffs rate, and they started to increase layoffs a few months earlier than smaller establishments and

firms. Both series show the same timing of the peak and depict rates very close for small and medium establishments and firms. What does this tell us? It tells us that the largest establishments and firms more often turned to layoffs and discharges as a labor management tool.

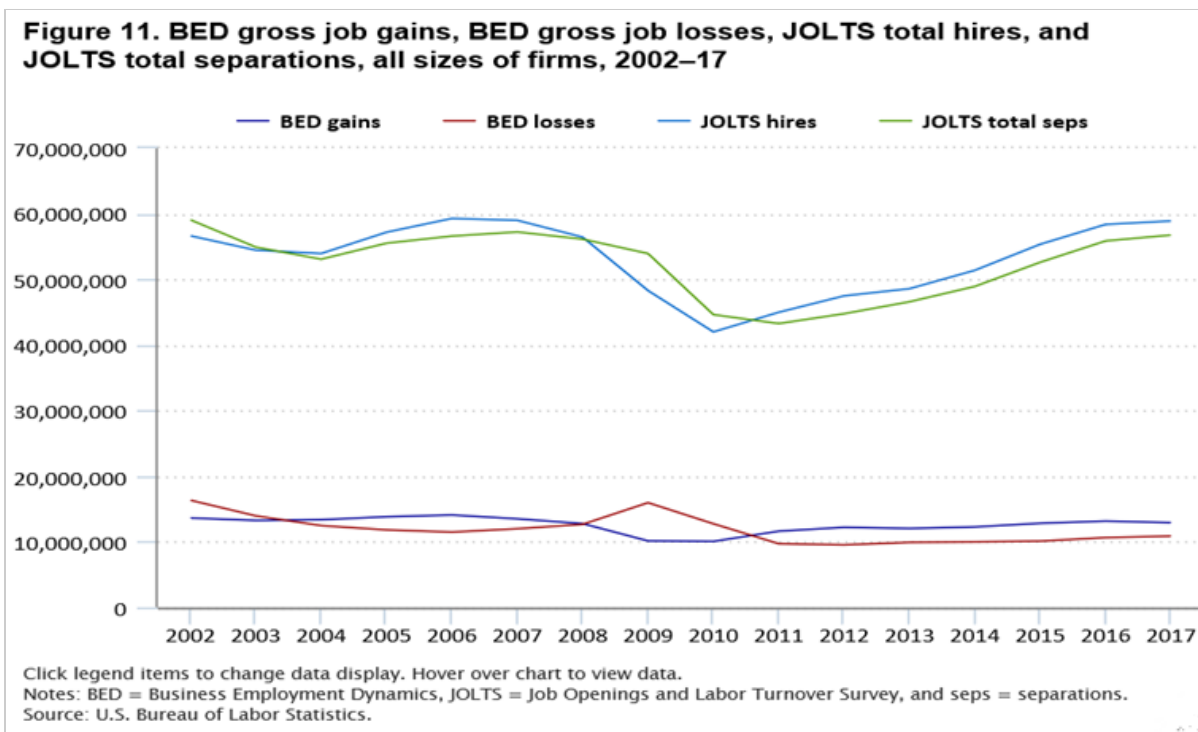
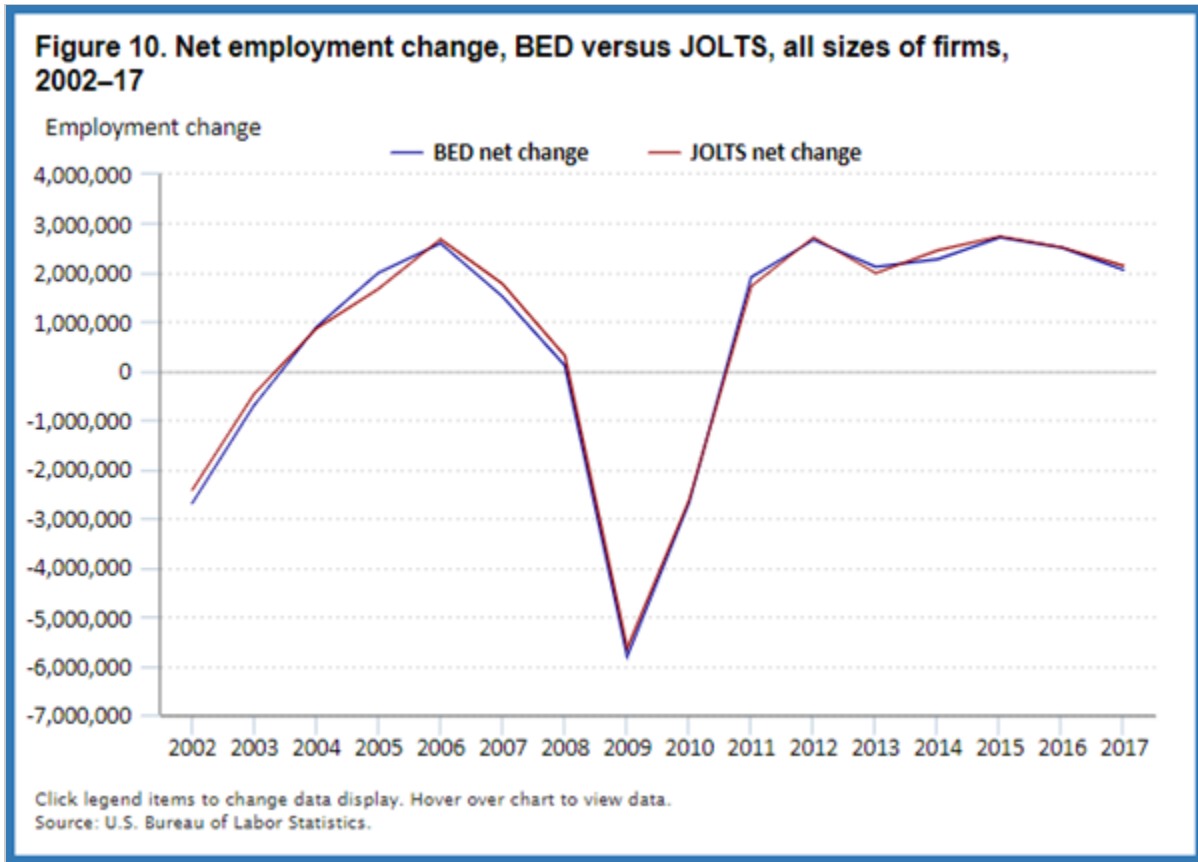
Other separations is the one JOLTS data element in which firm size data provide more information than establishment data. As with the other data elements, we see in the establishment data that most other separations were at small and medium establishments. However, when we grouped those small and medium establishments within their parent firm, we see that other separations were much more prominent at the largest firms. The levels differ more between small and medium establishments in the establishment data than in the firm data. We found that the other separations rates are nearly all between 0.2 percent and 0.4 percent in the establishment data, making analysis difficult. But the firm-based data series show differences in rates over time. They show that between size classes, the largest firms had the highest other separations rates, whereas small and medium firms had nearly equal rates.

Comparing size class data across BLS programs

As mentioned earlier, the BED program is another BLS program that publishes size class data for the private sector.^[13] Its data measure quarterly employment change, and published data series include gross job gains and gross job losses. Gross job gains measure the total positive employment change at businesses that increase employment between quarters. Similarly, gross job losses measure the total negative employment change at businesses that decrease employment between quarters.

Since changes in employment are the result of workers being hired and separated, comparing the BED job gains and losses with JOLTS hires and separations is natural. For comparison with the annual BED data, the JOLTS monthly data can be summed by year.

Looking first at the total private level, in figure 10, we find that the BED net employment change and the JOLTS implied net employment change (hires minus separations) trended nearly identically. Both series increased after the end of the 2001–03 recession, decreased before and during the 2007–09 recession, increased 2009–11, and then plateaued from 2011 onward. The trends, shown in figure 11, also track well for gross job gains and losses and hires and separations. When JOLTS hires outnumbered separations, BED gains outnumbered losses, such as between the two recessions and after the second recession. During the recessions, JOLTS separations outnumbered hires while BED losses outnumbered gains. The BED losses and JOLTS separations shown in the figure exhibit the same steep decline after 2009, after the recession ended.



Next, we look at decomposing data by size class. By decomposing data shown in figures 12a–c and 13a–c (at the end of this article) of both programs into three firm size classes, we find that the data continue to track well. In the

smallest firm size (1–49 employees), the series trend together well, although the JOLTS net employment change is lower than the BED net change (see figure 12a). The hires and separations trends, in figure 13a, match the BED gains and losses, with losses exceeding gains essentially during the same time in which separations outnumbered hires.

The series of medium firms (50–499 employees) for JOLTS and BED trend well too, as figure 12b shows, but with a much smaller gap between the BED and JOLTS net employment change. Both series had their largest negative net employment change in 2009 and then rose until 2011 before plateauing. Separations outnumbered hires at the same time that losses outnumbered gains after the 2007–09 recession, and both had the same turning point in 2009 when hires were at a minimum and losses peaked. (See figure 13b.)

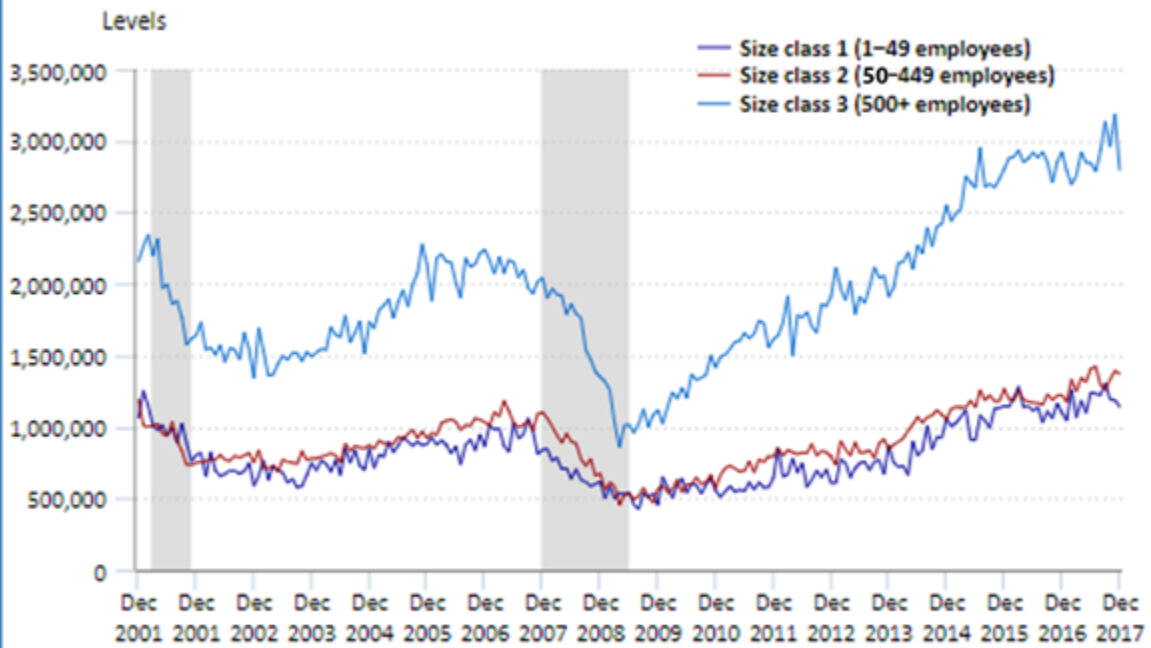
The large firms' (500-plus employees) series also trended well. However, we see (in figure 12c) that the JOLTS net employment change was higher than the BED net employment change (the reverse of that for small firms). As with the medium firms, both large-firm series had the largest negative net employment change in 2009 before rising. The large firms, however, plateaued a little later, in 2012 rather than in 2011. In addition, separations outnumbered hires at the same time that losses outnumbered gains after the 2007–09 recession; however, the BED losses peaked in 2009, before the JOLTS hires hit their low point in 2010. (See figure 13c.)

This very basic analysis shows that the JOLTS and BED data display similar trends by firm size. If the data series were tabulated by quarter, they may match more closely. The BED estimates are based on a much larger dataset, and the program publishes much more detail than JOLTS. The BED program also has base sizing, end sizing, and dynamic sizing of firms. The JOLTS firm-based size class estimates are based on a base-sizing approach.

Conclusion

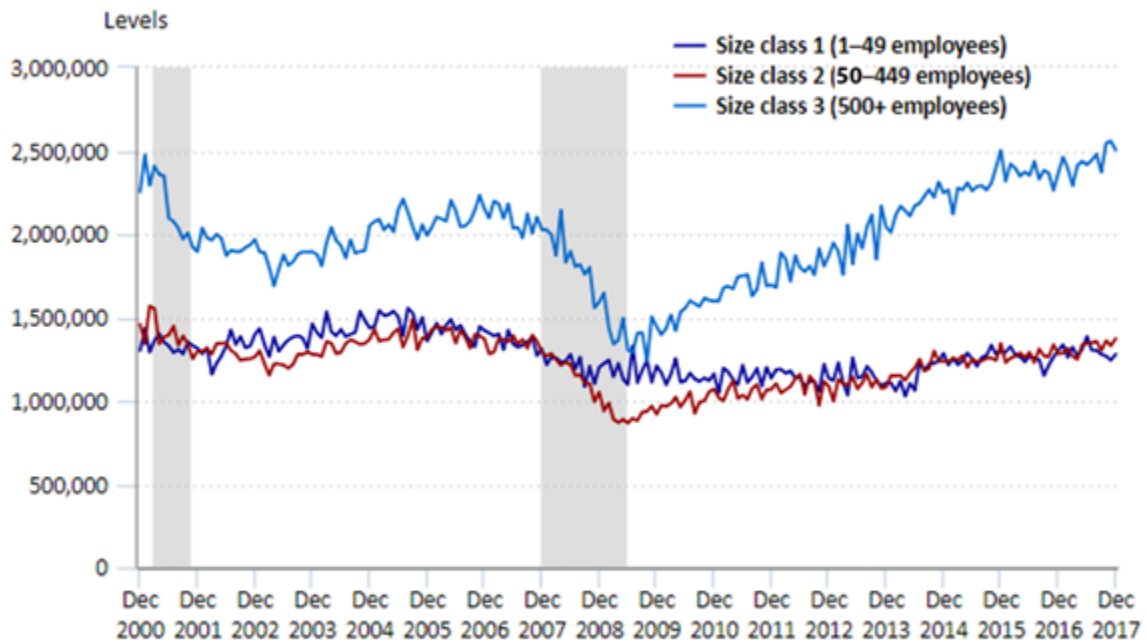
The official JOLTS estimates of job openings, hires, and separations by industry and by region provide useful data for analyzing the U.S. labor market. The experimental establishment size class data added in 2010 provided a new perspective on how employers and employees react to business cycle changes. The new firm size data, first released in September 2017 and updated in September 2018, are more informative tools for determining how employers manage labor through job openings, hires, and layoffs and discharges and how employees navigate changes in the business cycle through quitting or not quitting. We also see the effects of the business cycle on the employer transfers between locations and employee retirement or retirement postponement.

Figure 3a. Job openings levels of firm-based size classes, by number of employees, seasonally adjusted, December 2001 to December 2017



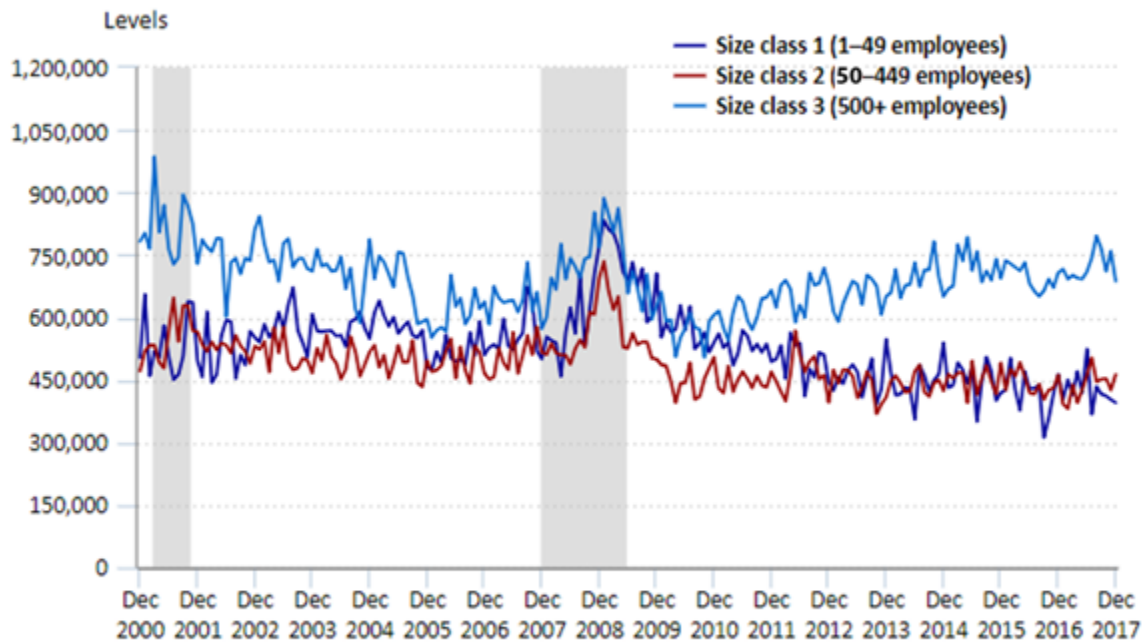
Shaded areas represent recessions as determined by the National Bureau of Economic Research.
 Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.

Figure 3b. Hires levels of firm-based size classes, by number of employees, seasonally adjusted, December 2001 to December 2017



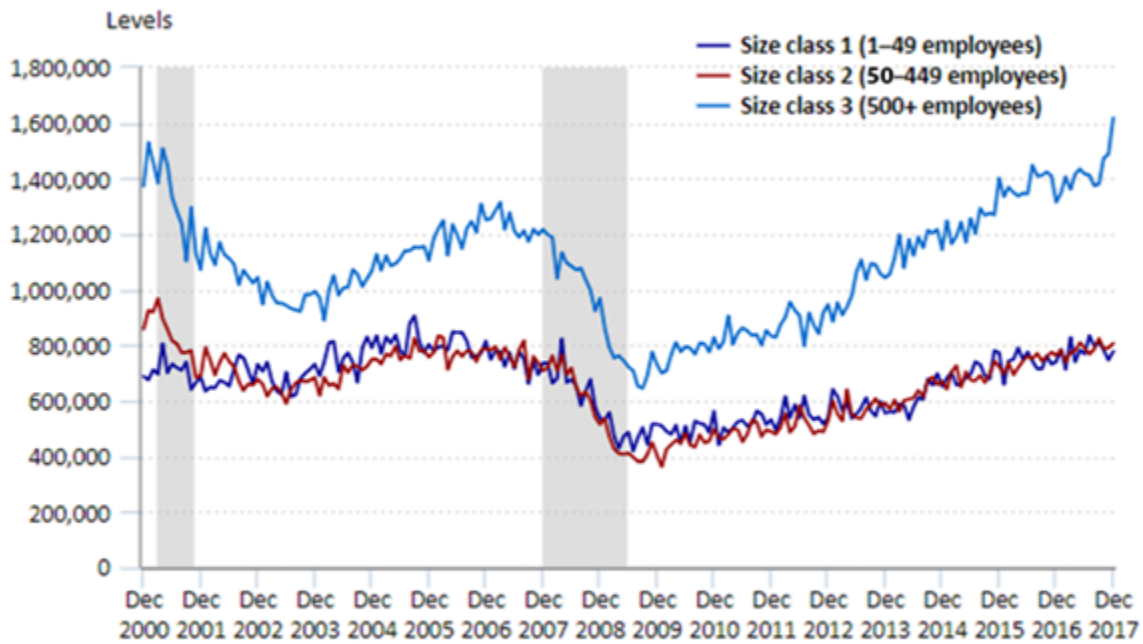
Shaded areas represent recessions as determined by the National Bureau of Economic Research.
 Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.

Figure 3c. Layoffs and discharges levels of firm-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2017



Shaded areas represent recessions as determined by the National Bureau of Economic Research.
 Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.

Figure 3d. Quits levels of firm-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2017



Shaded areas represent recessions as determined by the National Bureau of Economic Research.
Click legend items to change data display. Hover over chart to view data.
Source: U.S. Bureau of Labor Statistics.

Figure 3e. Other separations levels of firm-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2017

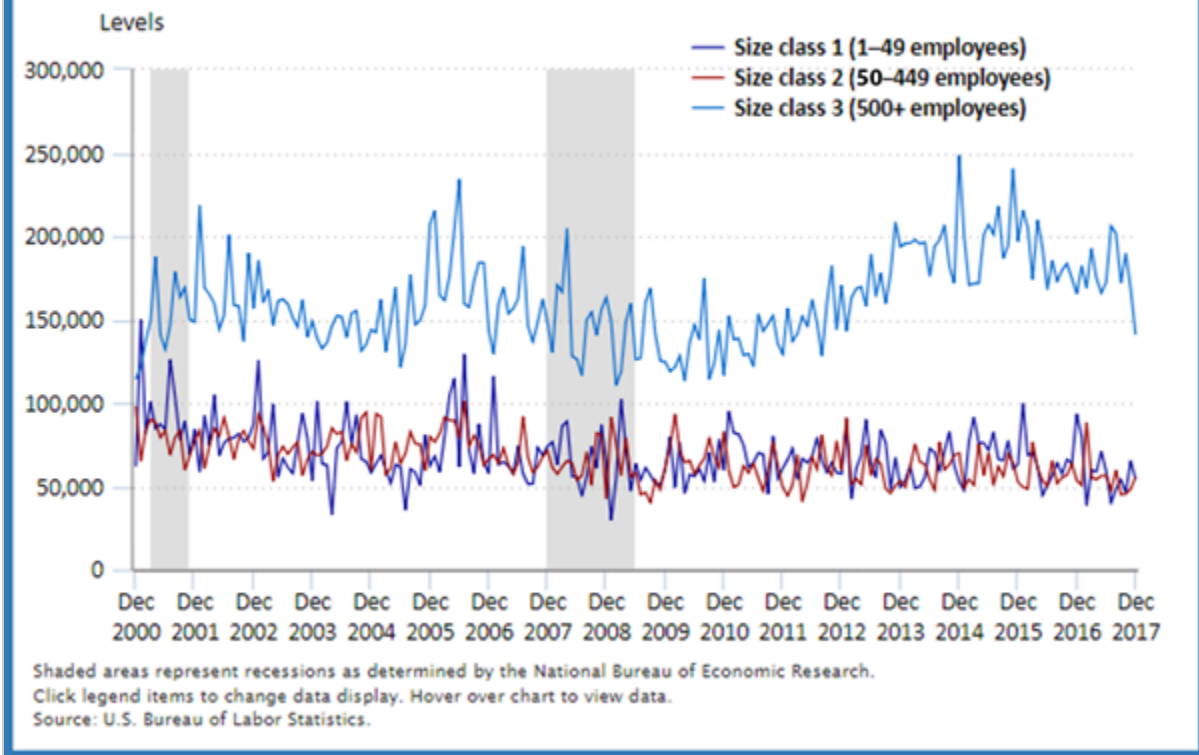
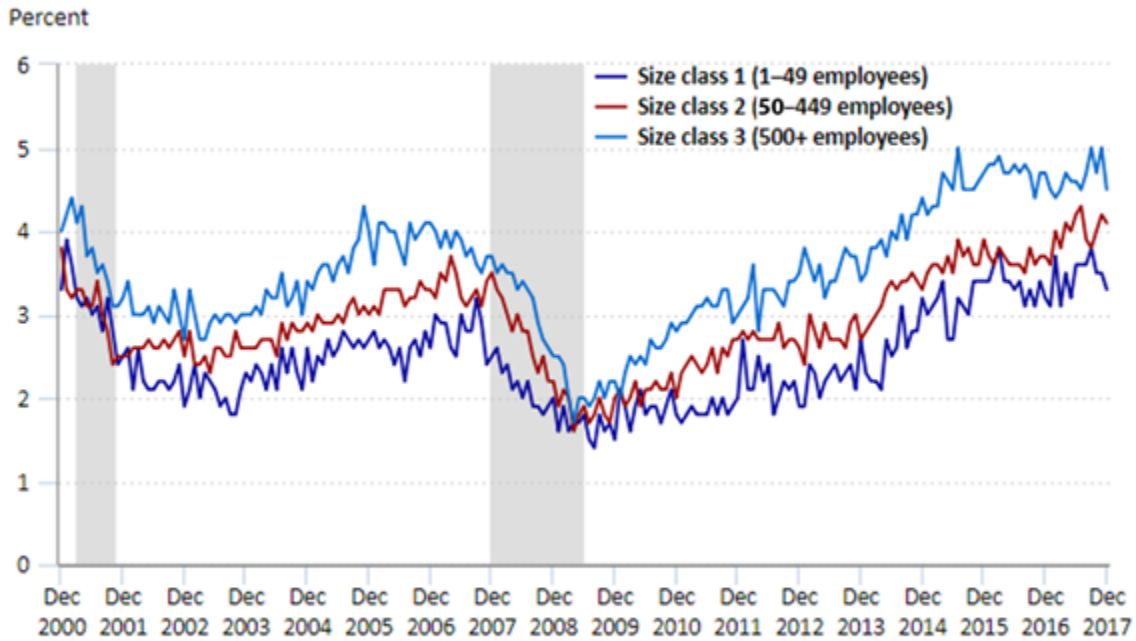
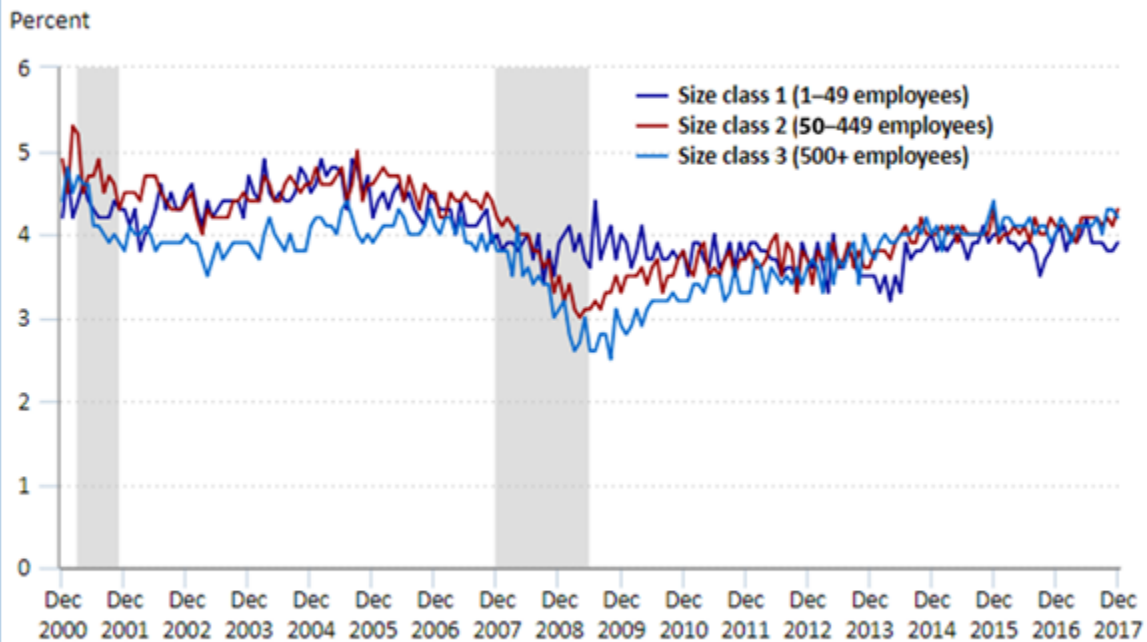


Figure 4a. Job openings rates of firm-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2017



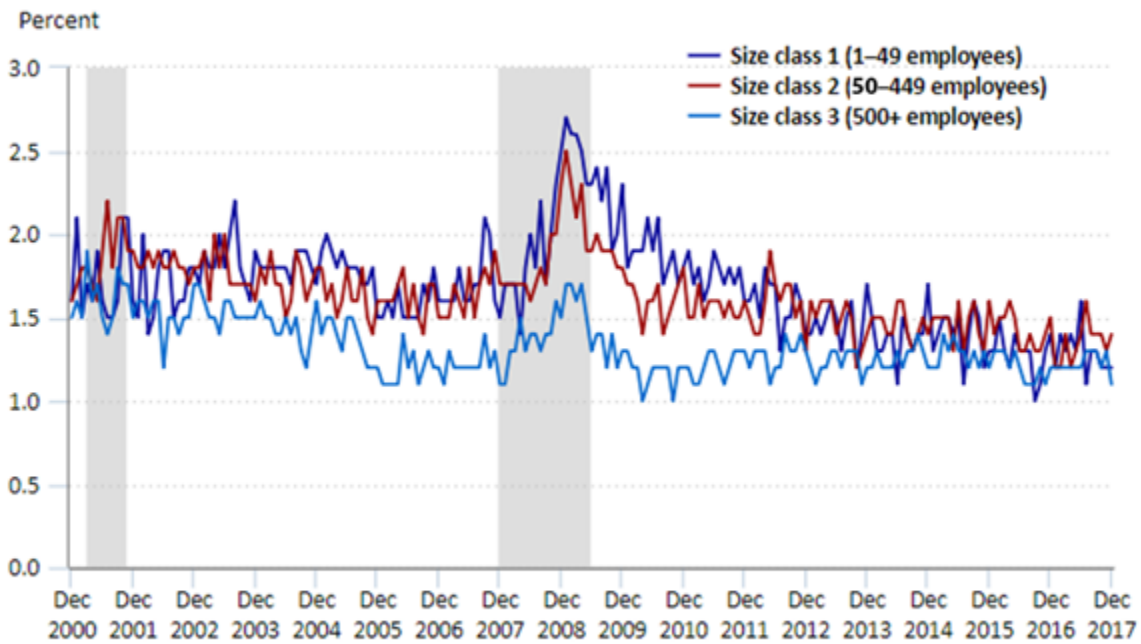
Shaded areas represent recessions as determined by the National Bureau of Economic Research.
 Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.

Figure 4b. Hires rates of firm-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2017



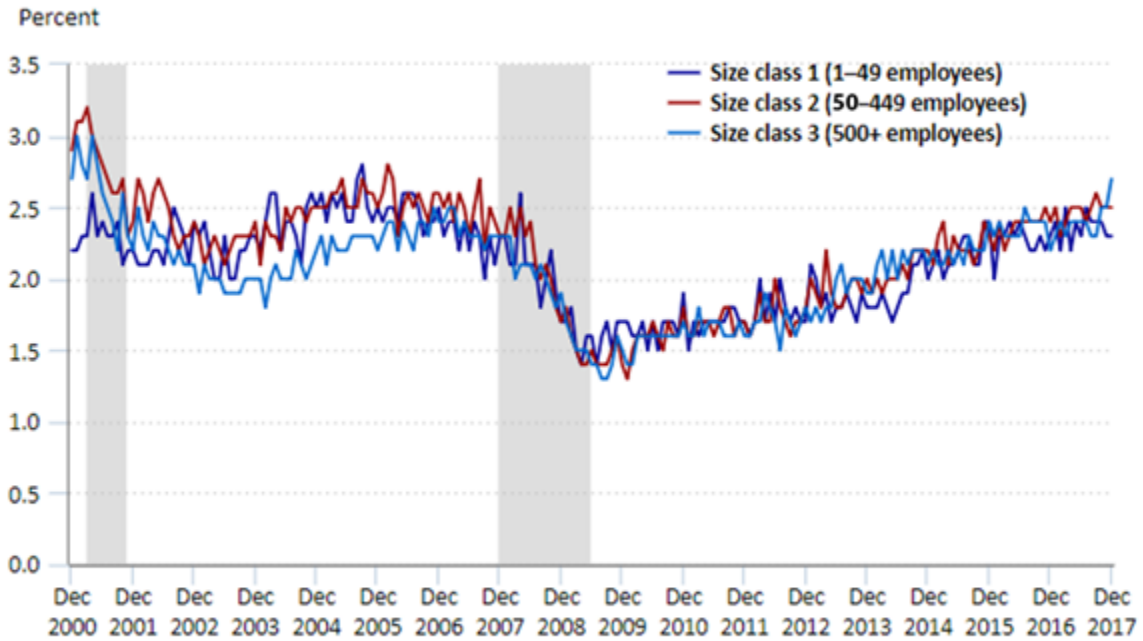
Shaded areas represent recessions as determined by the National Bureau of Economic Research.
 Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.

Figure 4c. Layoffs and discharges rates of firm-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2017



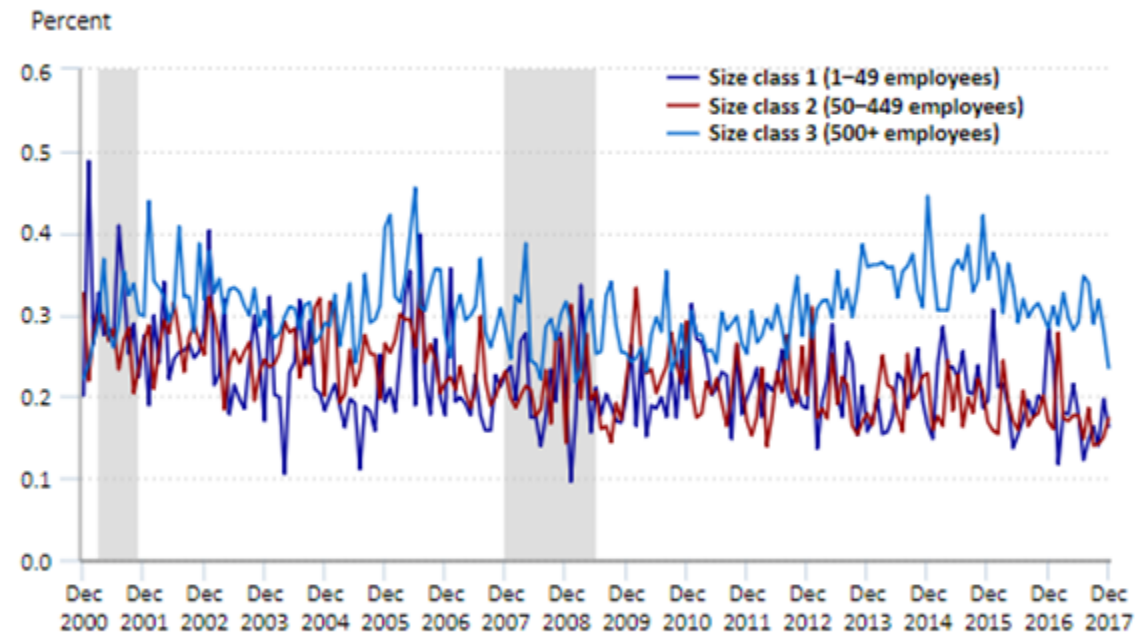
Shaded areas represent recessions as determined by the National Bureau of Economic Research.
 Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.

Figure 4d. Quits rates of firm-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2017



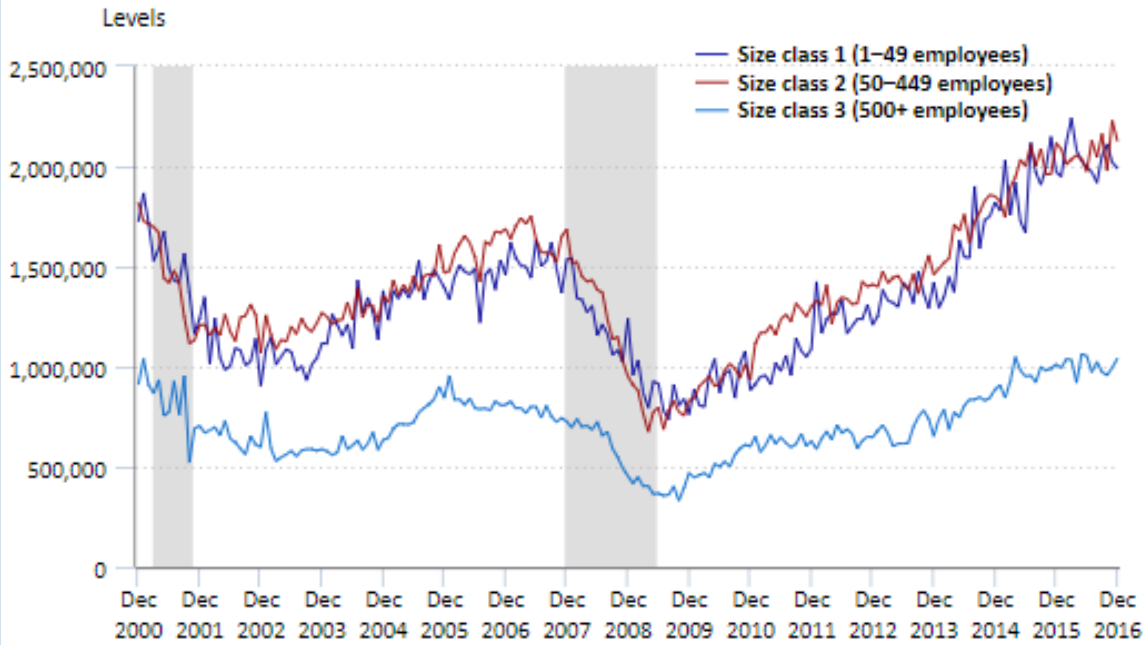
Shaded areas represent recessions as determined by the National Bureau of Economic Research.
Click legend items to change data display. Hover over chart to view data.
Source: U.S. Bureau of Labor Statistics.

Figure 4e. Other separations rates of firm-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2017



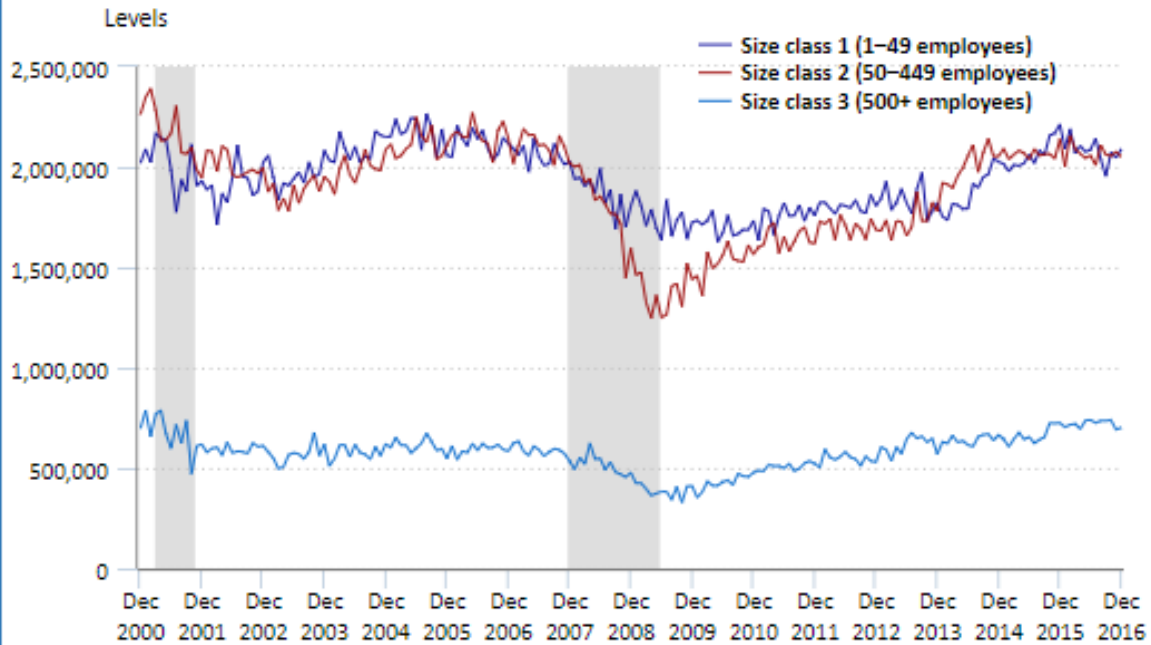
Shaded areas represent recessions as determined by the National Bureau of Economic Research.
 Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.

Figure 8a. Job openings levels of establishment-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2016



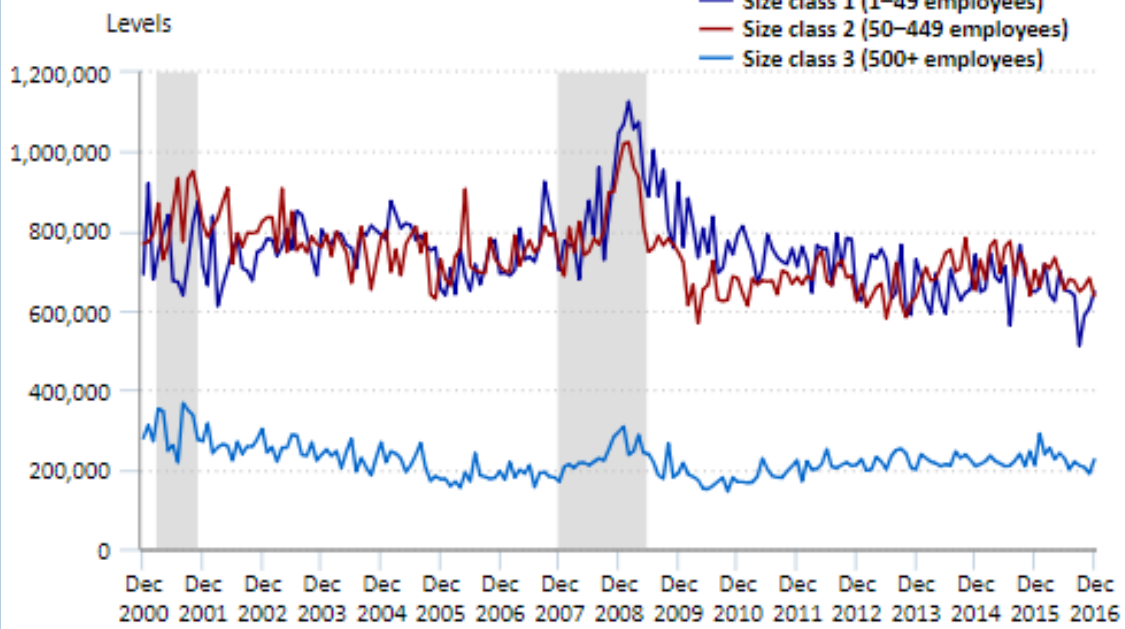
Shaded areas represent recessions as determined by the National Bureau of Economic Research.
 Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.

Figure 8b. Hires levels of establishment-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2016



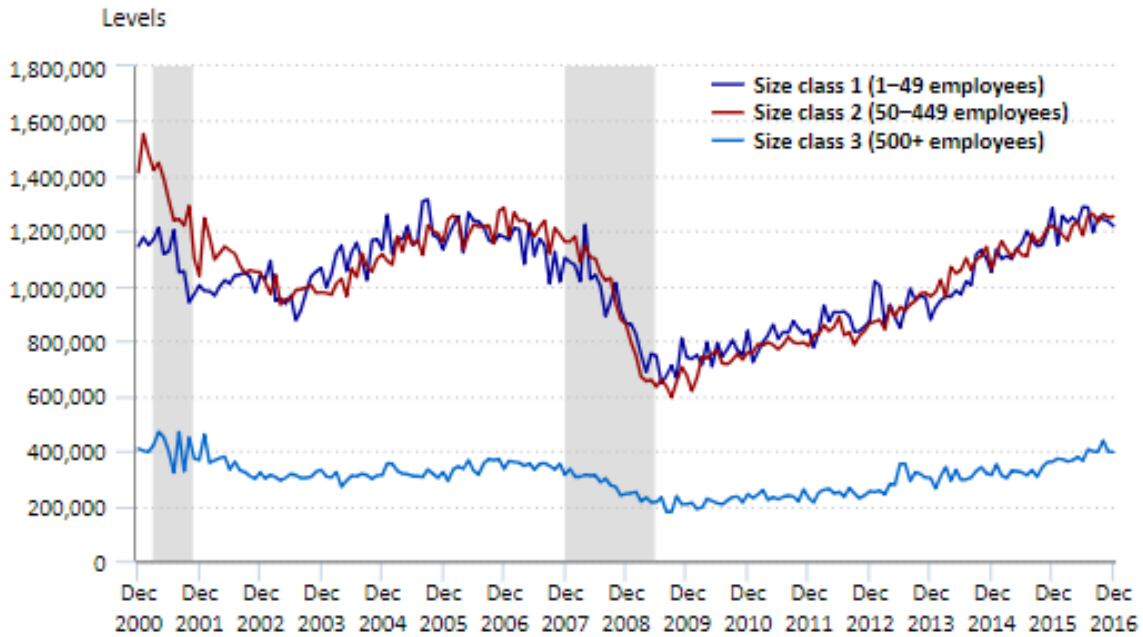
Shaded areas represent recessions as determined by the National Bureau of Economic Research.
 Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.

Figure 8c. Layoffs and discharges levels of establishment-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2016



Shaded areas represent recessions as determined by the National Bureau of Economic Research.
 Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.

Figure 8d. Quits levels of establishment-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2016



Shaded areas represent recessions as determined by the National Bureau of Economic Research.
 Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.

Figure 8e. Other separations levels of establishment-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2016

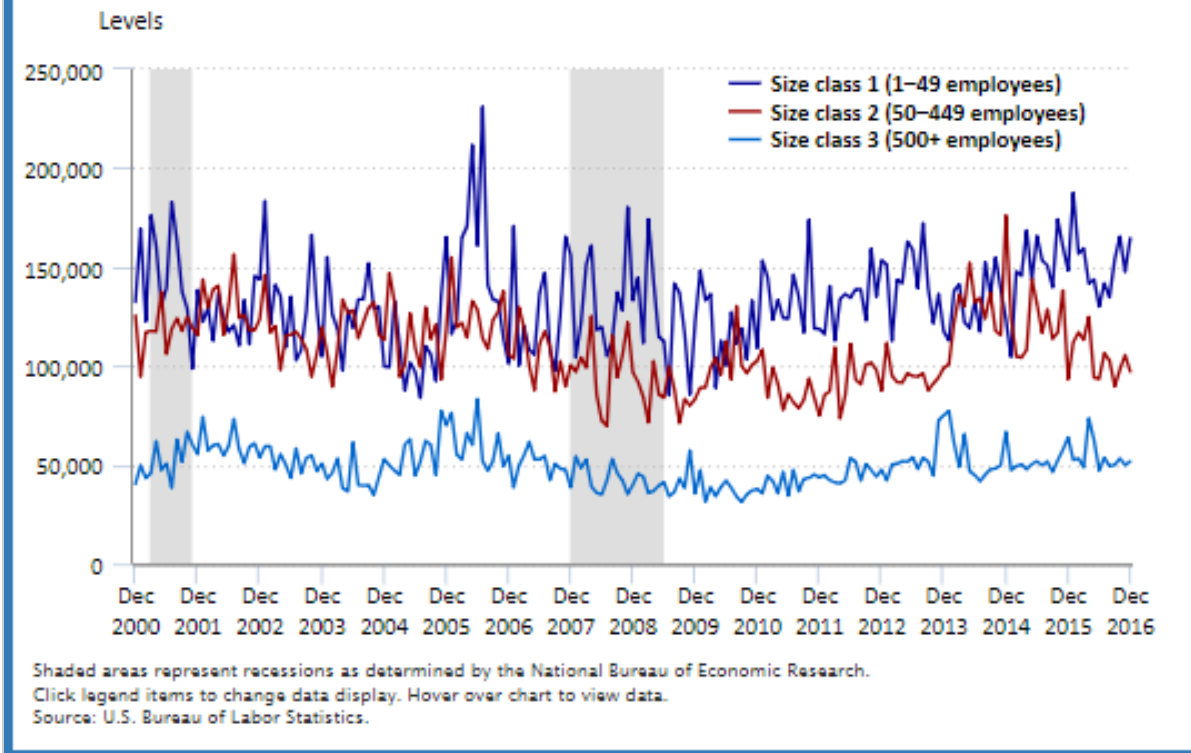
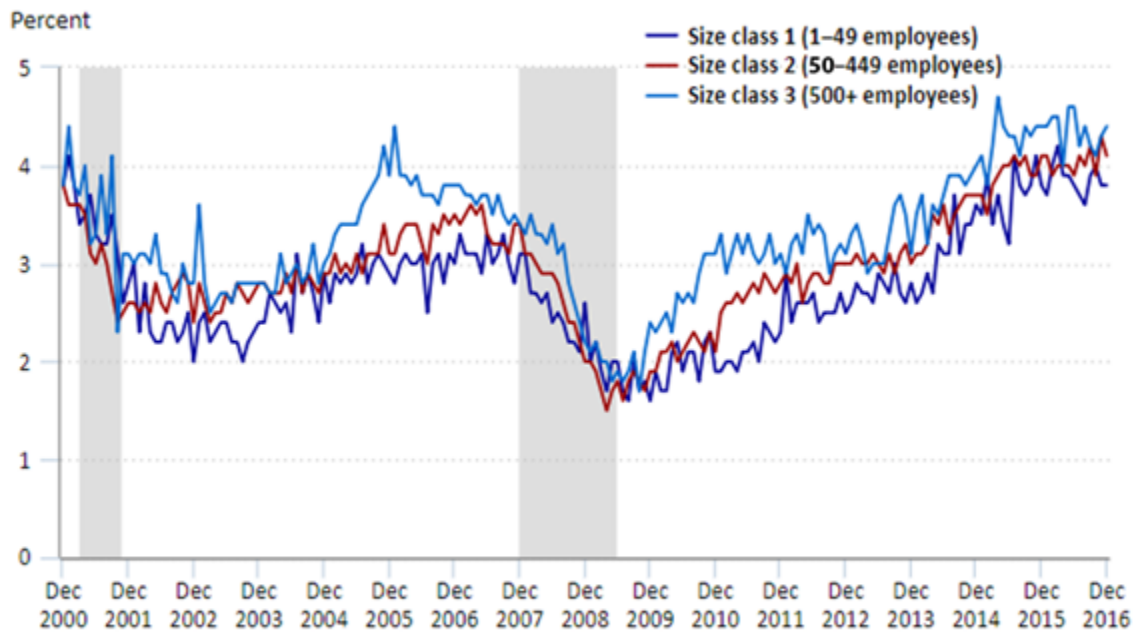
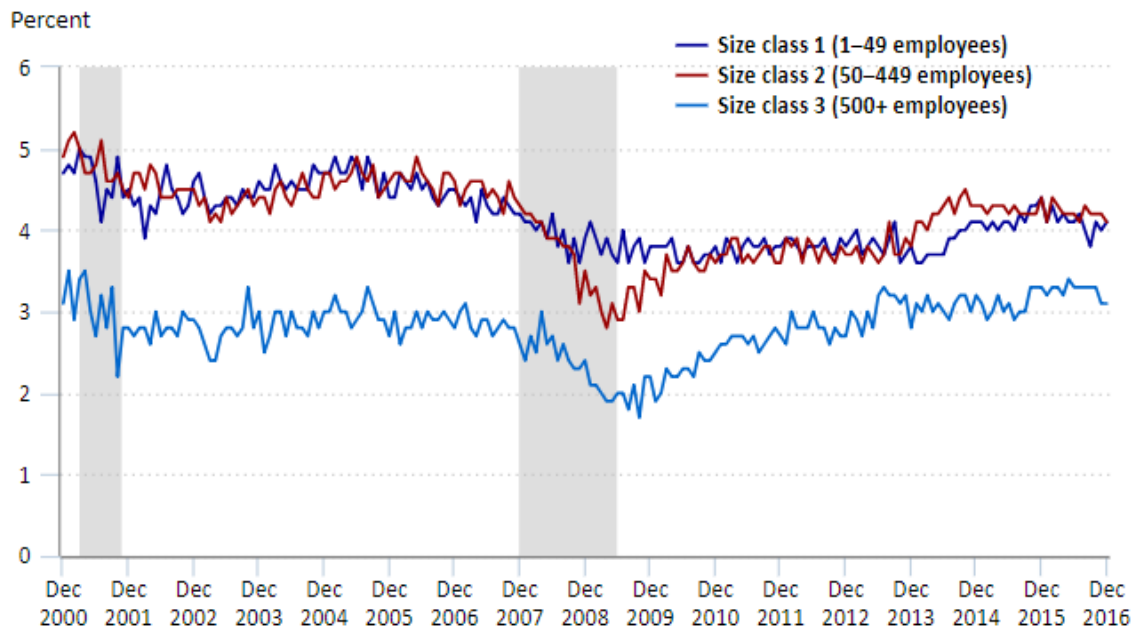


Figure 9a. Job openings rates of establishment-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2016



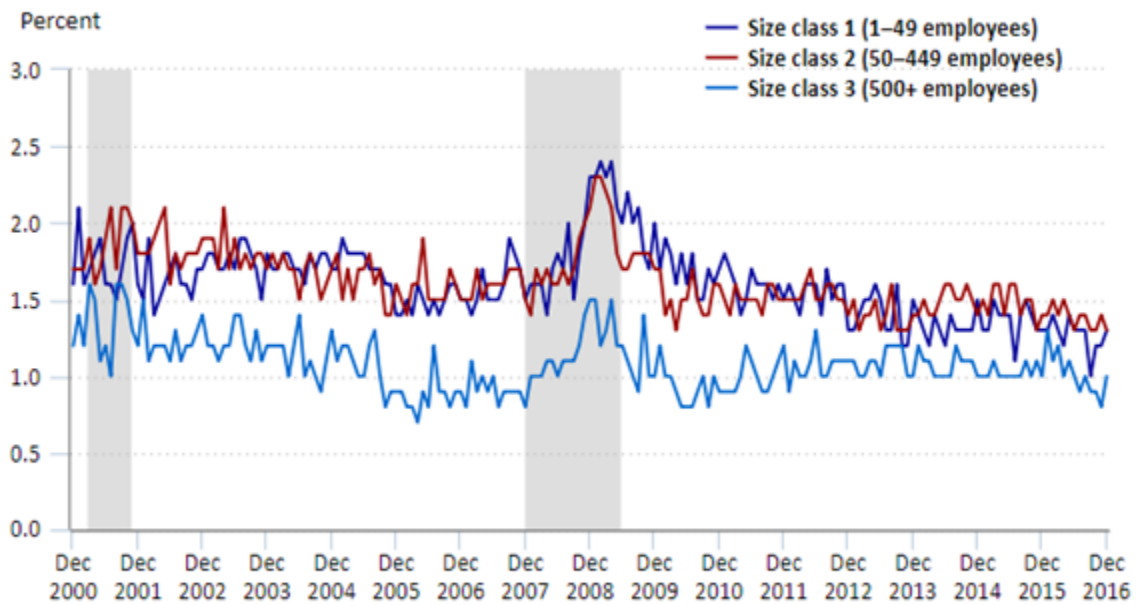
Shaded areas represent recessions as determined by the National Bureau of Economic Research.
 Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.

Figure 9b. Hires rates of establishment-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2016



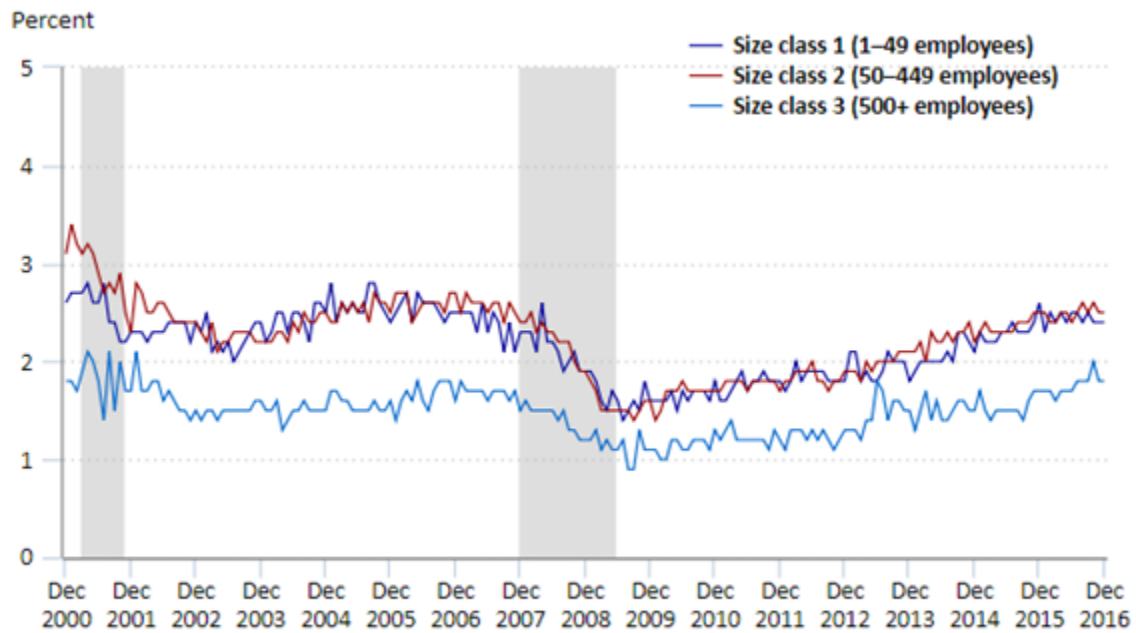
Shaded areas represent recessions as determined by the National Bureau of Economic Research.
 Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.

Figure 9c. Layoffs and discharges rates of establishment-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2016



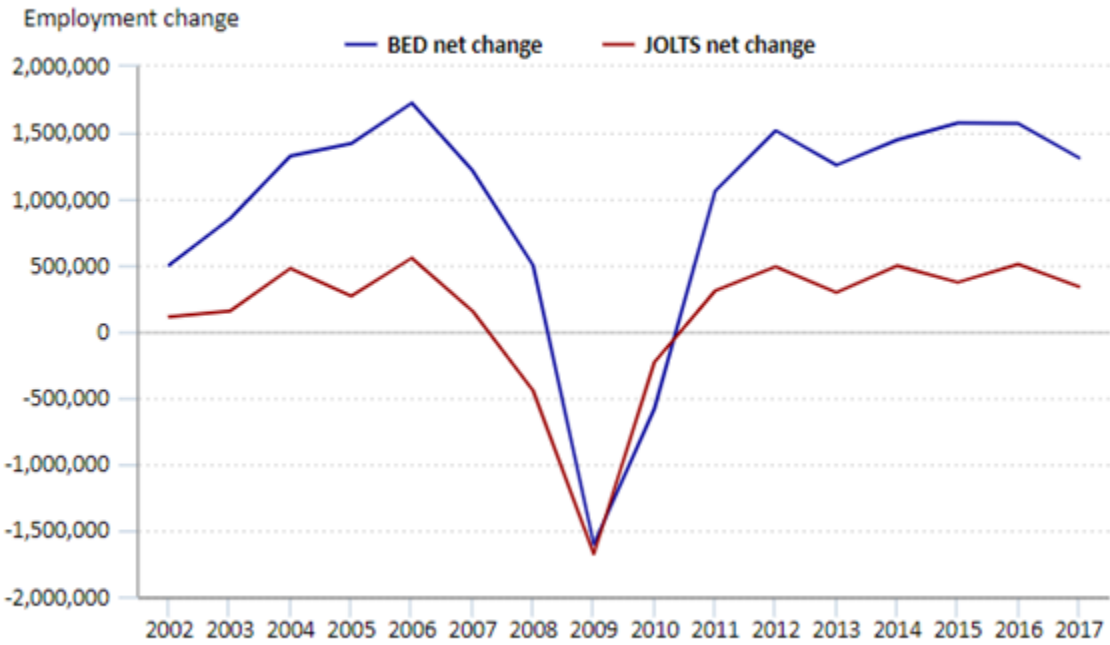
Shaded areas represent recessions as determined by the National Bureau of Economic Research.
 Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.

Figure 9d. Quits rates of establishment-based size classes, by number of employees, seasonally adjusted, December 2000 to December 2016



Shaded areas represent recessions as determined by the National Bureau of Economic Research.
 Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.

Figure 12a. Net employment change, BED versus JOLTS, 1–49 employees, 2002–17

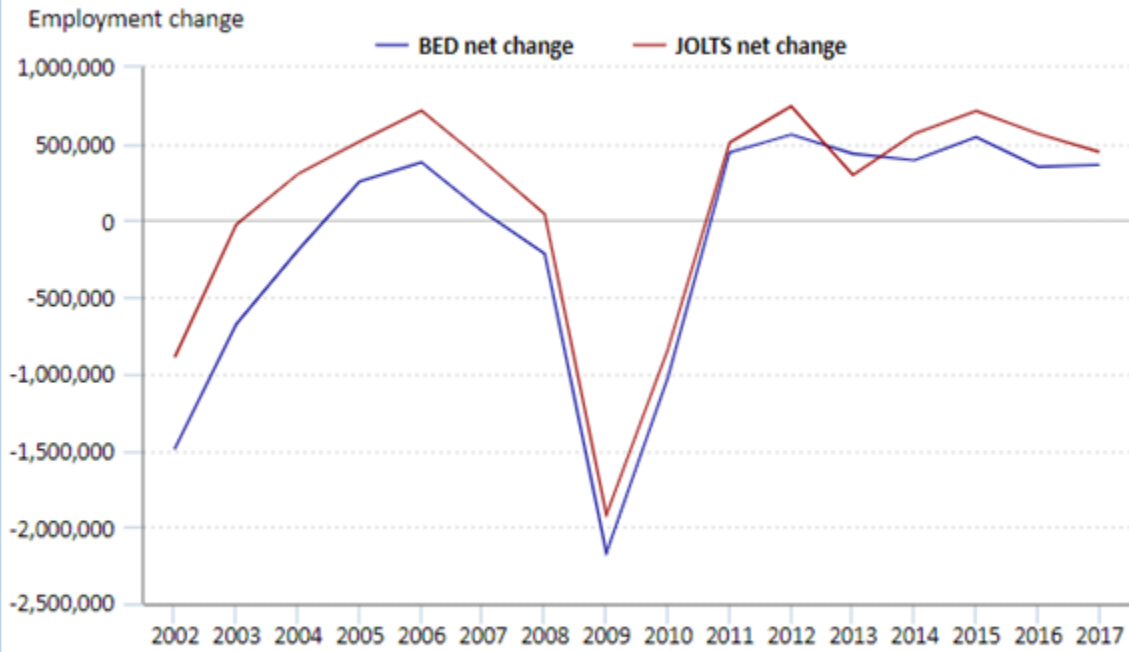


Click legend items to change data display. Hover over chart to view data.

Notes: BED = Business Employment Dynamics, and JOLTS = Job Openings and Labor Turnover Survey.

Source: U.S. Bureau of Labor Statistics.

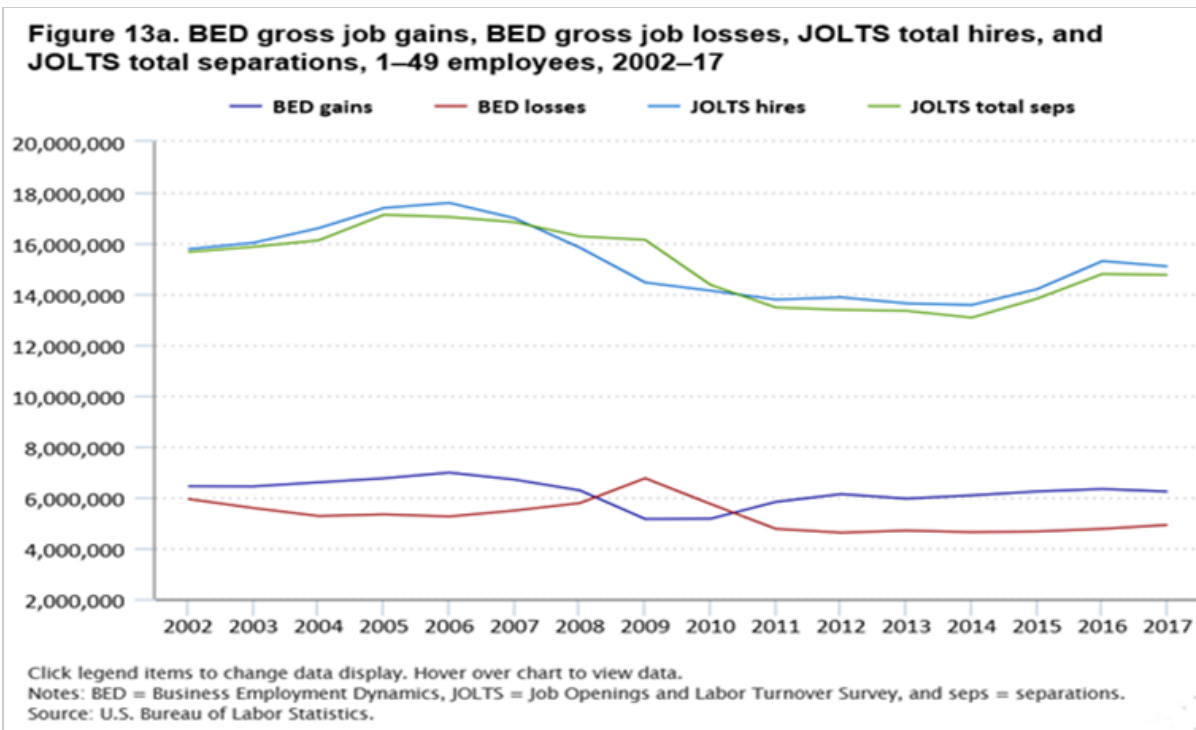
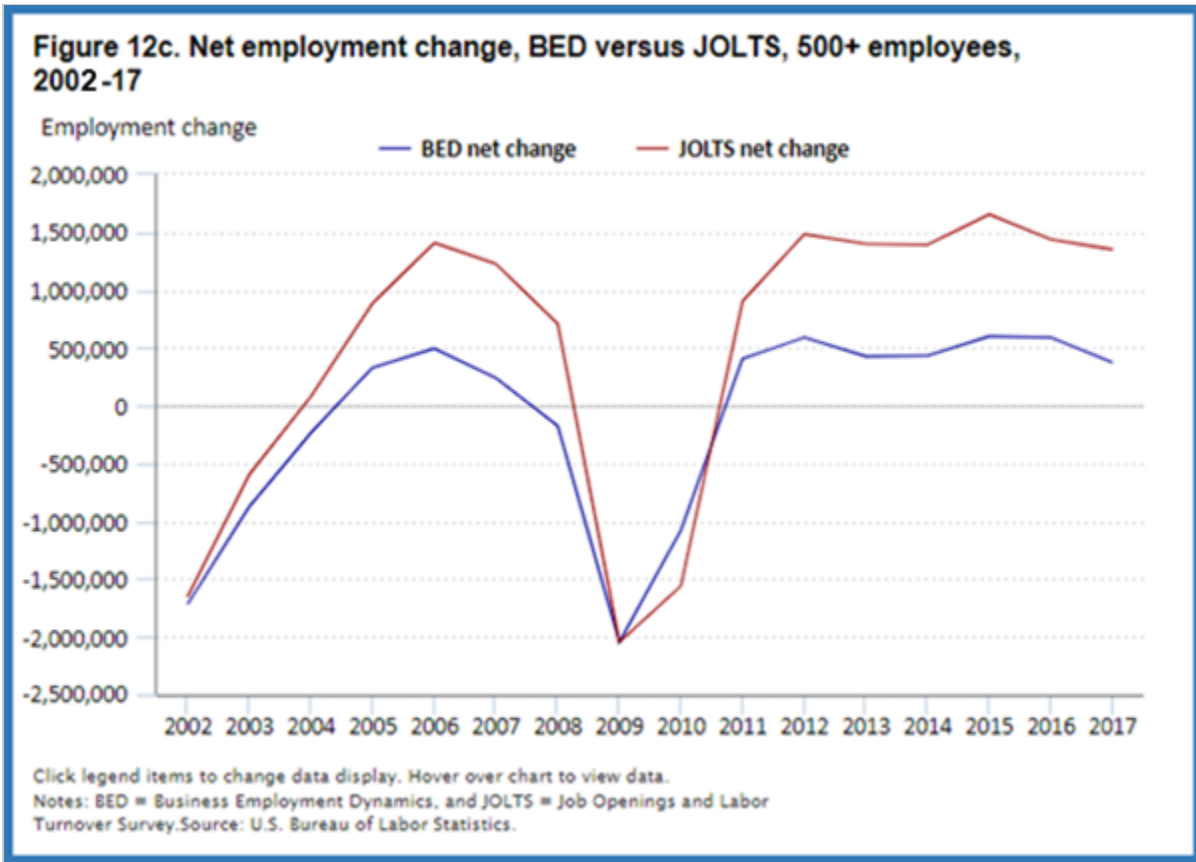
Figure 12b. Net employment change, BED versus JOLTS, 50–499 employees, 2002–17

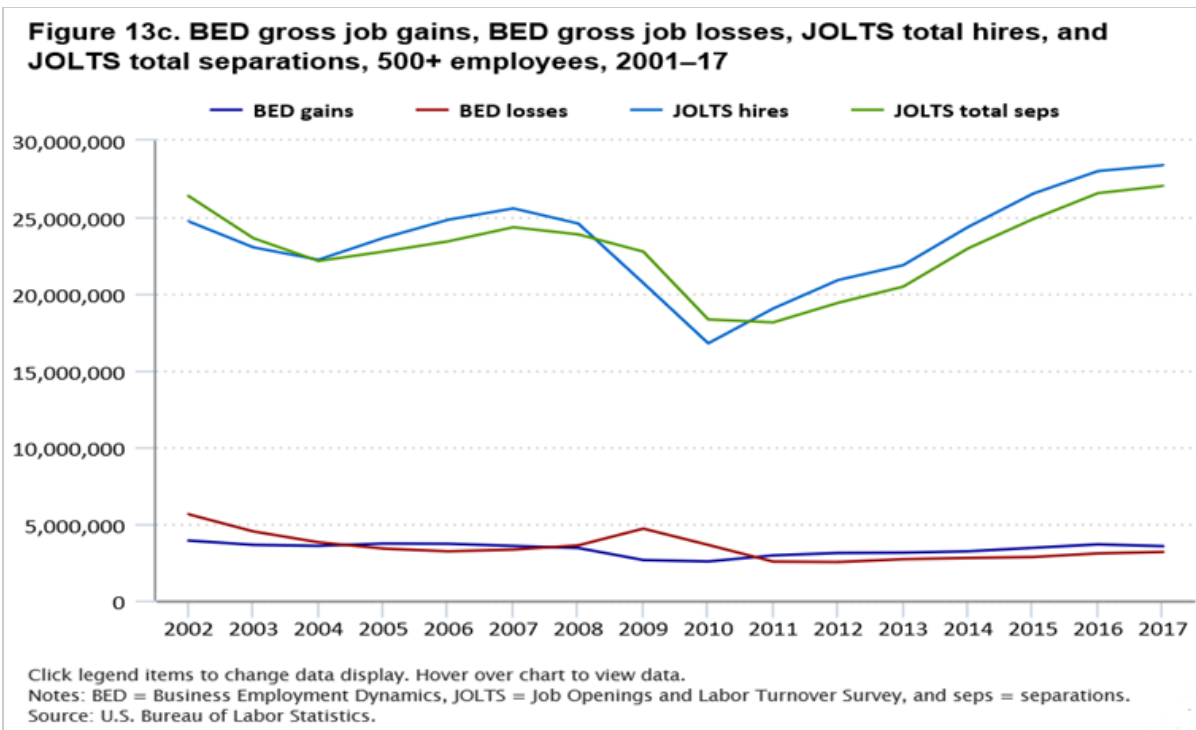
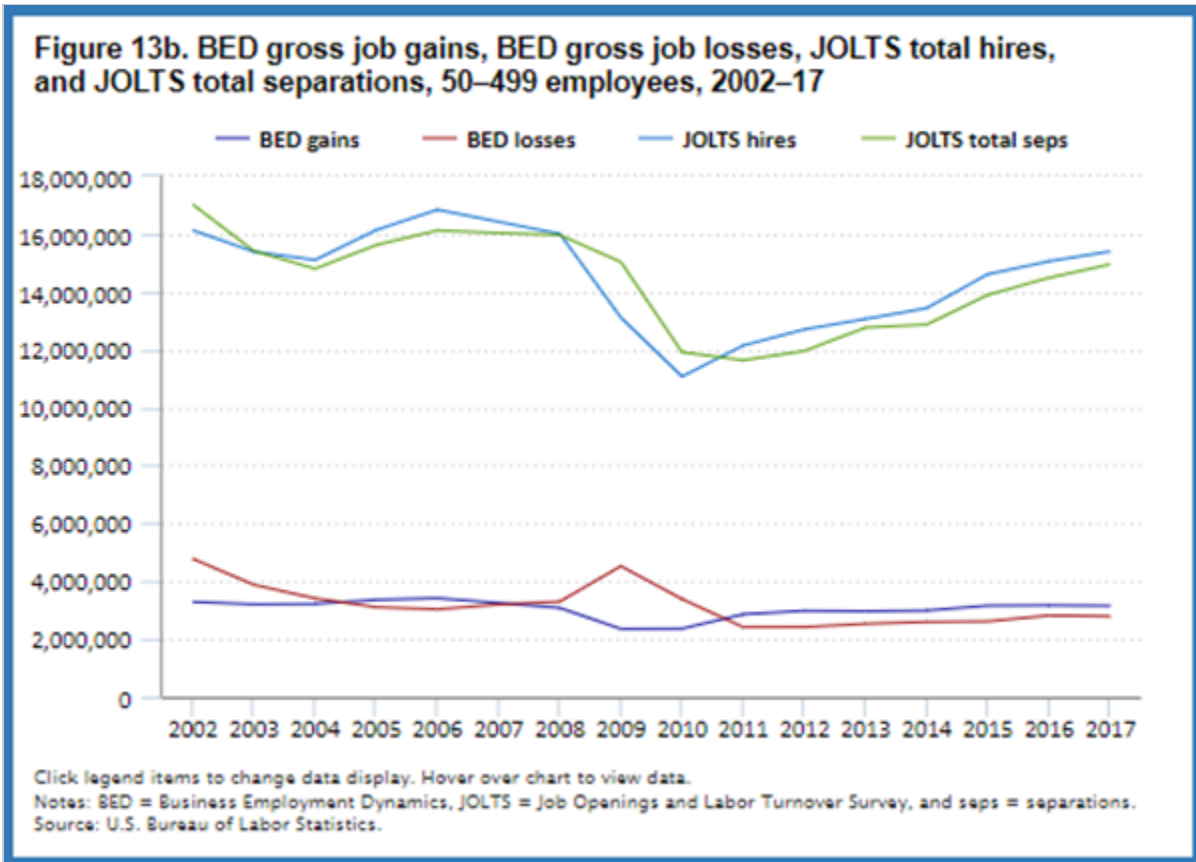


Click legend items to change data display. Hover over chart to view data.

Notes: BED = Business Employment Dynamics, and JOLTS = Job Openings and Labor Turnover Survey.

Source: U.S. Bureau of Labor Statistics.





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NOTES

[1](#) Shail J. Butani, Richard L. Clayton, Vinod Kapani, James R. Spletzer, David M. Talan, and George S. Werking, Jr., "Business employment dynamics: tabulations by employer size," *Monthly Labor Review*, February 2006, <https://www.bls.gov/opub/mlr/2006/02/art1full.pdf>.

[2](#) Jessica Helfand, Akbar Sadeghi, and David M. Talan, "Employment dynamics: small and large firms over the business cycle," *Monthly Labor Review*, March 2007, <https://www.bls.gov/opub/mlr/2007/03/art3full.pdf>.

[3](#) Katherine Bauer Klemmer, "Analysis of JOLTS research estimates by size of firm" (paper presented at a meeting of the American Statistical Association, San Diego, CA, July 31, 2012), <https://www.bls.gov/jlt/joltsfirmsizeanalysis.pdf>.

[4](#) Brian Headd, "The characteristics of small-business employees," *Monthly Labor Review*, April 2000, <https://www.bls.gov/opub/mlr/2000/04/art3full.pdf>.

[5](#) The JOLTS sample is allocated by region, industry, and six size classes: 1–9 employees, 10–49 employees, 50–249 employees, 250–999 employees, 1,000–4,999 employees, and 5,000-plus employees. For size class estimates, the six sampling size classes are collapsed into three estimation size classes (1–49, 50–499, and 500 plus).

[6](#) For more information on the JOLTS program, go to the homepage at <https://www.bls.gov/jlt>, call 202-691-5870, or email BLS at JoltsInfo@bls.gov.

[7](#) You can find more information about the methodology statement at "Job Openings and Labor Turnover Survey, Experimental JOLTS estimates by establishment size class," U.S. Bureau of Labor Statistics, last modified February 12, 2019, <https://www.bls.gov/jlt/sizeclassmethodology.htm>.

[8](#) For more information on the firm size methodology and data, go to <https://www.bls.gov/jlt/>.

[9](#) The total separations data series is not analyzed in this article since it is the sum of quits, layoffs and discharges, and other separations that move in different directions, obscuring movement at the total separations level.

[10](#) For more data on firm size, see BLS table F, "Distribution of private sector employment by firm size class: 1993/Q1 through 2018/Q1, not seasonally adjusted," at https://www.bls.gov/web/cewbd/table_f.txt.

[11](#) Data for 2010–17 from the National Compensation Survey at BLS show that, on average, retirement benefits are offered by 44 percent of establishments with fewer than 50 employees, 75 percent of establishments with 50–99 employees, 85 percent of establishments with 100–499 employees, and 94 percent of establishments with 500-plus employees.

[12](#) QCEW establishment employment data are available only for January, February, and March of each year. See <https://www.bls.gov/cew> for more information on the QCEW program.

[13](#) For more information on the BED program, see <https://www.bls.gov/bdm/>.

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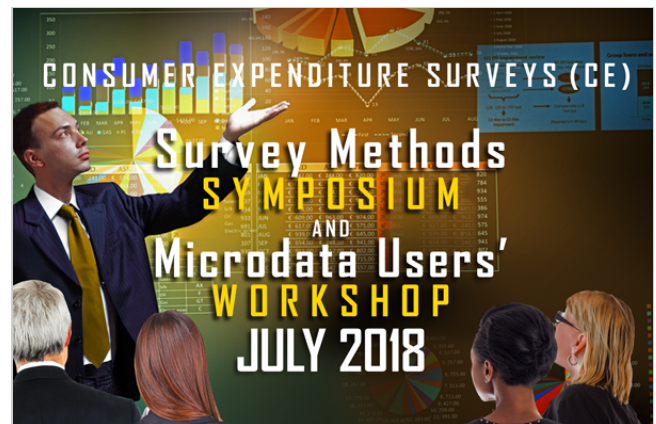
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Consumer Expenditure Survey Methods Symposium and Microdata Users' Workshop, July 17–20, 2018

The Consumer Expenditure Surveys (CE) program collects expenditures, demographics, and income data from families and households. The CE program held its annual Survey Methods Symposium and Microdata Users' Workshop from July 17 to 20, 2018, to address CE-related topics in survey methods research, to provide free training in the structure and uses of the CE microdata, and to explore possibilities for collaboration. Several economists from the CE program, staff from other U.S. Bureau of Labor Statistics offices, and research experts in a variety of fields—including academia, government, and private industry—gathered together to explore better ways to collect CE data and to learn how to use the microdata once they are produced.

The Consumer Expenditure Surveys (CE) are the most detailed source of data on expenditures, demographics, and income that the federal government collects directly from families and households (or, more precisely, “consumer units”).^[1] In addition to publishing standard expenditure tables twice a year, the U.S. Bureau of Labor Statistics (BLS) CE program releases annual microdata on the CE website from its two component surveys (the Quarterly Interview Survey and the Diary Survey). Researchers use these data in a variety of fields, including academia, government, market research, and other private industry areas.^[2]

In July 2006, the CE program office conducted the first in a series of annual workshops in order to achieve three goals: (1) to help users better understand the structure of the CE microdata; (2) to provide training in the uses of the surveys; and (3) to promote awareness, through presentations by current users and interactive forums, of the different ways the data are used, and thus provide opportunities to explore collaboration. In 2009, the workshop expanded from 2 days to 3 days to include presentations from data users not affiliated with BLS. This allowed users to showcase their experiences with the public use microdata (PUMD) files (<https://www.bls.gov/cex/>



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[pumd.htm](#)), to discuss problems and successes using the data, and to seek comment and guidance from CE program staff in completing their work.

Starting in 2012, the program office has preceded the workshop with a 1-day symposium to explore topics in survey methods research in support of the CE Gemini Redesign Project (Gemini Project), a major initiative to redesign the CE (for more information, go to <https://www.bls.gov/cex/geminiproject.htm>).

In addition to the CE program staff, workshop speakers have included economists from BLS regional offices and researchers not affiliated with BLS. Similarly, symposium speakers have included CE program staff, other BLS National Office staff, and speakers from outside BLS. This article describes the 2018 Survey Methods Symposium, conducted July 17, 2018, and the 2018 Microdata Users' Workshop, conducted July 18–20, 2018.

Survey methods symposium

The 2018 Symposium presentations focused on four research topics that are key features of the ongoing Gemini redesign initiative for the Consumer Expenditure Surveys (CE), and followed a similar format to that used in the 2017 Symposium. The four research topics were online diaries, record use, improving data quality through questionnaire design, and innovations in expenditure data collection. The CE program office invited representatives from other federal, international, and private sector surveys to share information about their existing methods and experiences on these research topics. The goals of the symposium were (1) to share CE research findings with stakeholders, survey researchers, and data users and (2) to promote a discussion about common challenges and solutions facing CE and other surveys.

The day was divided into four sessions, with each session centered on one of the four research topics. In each session, a representative from the CE program opened with a presentation on the CE experience, highlighting not only the results of the research, but also the goals to be reached related to the topic and the challenges encountered. The CE presentation was followed by short presentations given by representatives from other surveys on their existing methods or recently completed research relevant to the topic. At the end of each session, the CE representative moderated a discussion about the topic and the presentations, encouraging presenters and attendees to ask questions and provide comments.

In 2018, the symposium drew 65 attendees from universities, nonprofit organizations, private companies, medical-related establishments, and other federal agencies. In the following research topic sections, a review of the presentations is given, followed by a discussion of the key takeaways.

The symposium started with an introduction to the CE redesign by Dr. Parvati Krishnamurty, a senior economist in the CE program at BLS. The presentation outlined the original plans for the redesign, and recent modifications made to the redesign plan for implementation (<https://www.bls.gov/cex/gemini-overview-2018.pdf>). The redesign plan, which was intended to be implemented in its entirety, was found to have higher costs than the current survey. Therefore, the plan was modified to move to a phased implementation of key design elements into the CE surveys. The phased implementation plan retains the design elements that have been shown to be effective, which include a streamlined questionnaire with less expenditure detail, records focus (including a targeted incentive for record use), online diaries, and token incentives. These elements are to be implemented directly into the CE Diary and Interview surveys. Other design elements—such as a single sample design, two-interview structure, and two-wave

design—have been deferred for testing and implementation in subsequent years, pending changes to requirements or funding availability.

Online diaries

The first session was on online diaries. A major component of the CE redesign plan is the introduction of an online option for respondents to complete the diarykeeping task. This option is an alternative to the existing CE paper-and-pencil diary. The CE is planning a large-scale feasibility test of the online diaries in 2019–20, prior to putting the diary into production.

The good, the bad, and the CE online diary, Ian Elkin (BLS) <https://www.bls.gov/cex/good-bad-online-diaries.pdf>

Mr. Elkin described CE's journey over the past decade to design an online diary, beginning first with web diaries and then to mobile diaries as an alternative to the paper form that is the only mode currently offered for the CE Diary Survey. During this time, several tests were fielded to assess the usability of the online diary and the feasibility of implementation. These tests included the Web Diary Feasibility Test (2012), Individual Diaries Feasibility Test (2014), Proof of Concept Test (2015), and the Online Diary Improvement Project (2016). Some of these experiments involved comparing the use of personal diaries with household diaries. Since there was evidence that the personal diaries were unpopular with households and interviewers and did not lead to improvements in data quality, personal diaries have been dropped from future tests. Based on findings from past tests, the next step will be to conduct a large-scale feasibility test of online diaries. The online diary—two 1-week household diaries—will be device-optimized so respondents can access the diary on multiple devices including desktops, laptops, tablets, or smartphones. Respondents will be offered a \$5 prepaid incentive, but no conditional incentives, for diary keeping. The online diary will have the ability to filter and search entries and sort by expenditure categories. The online diary will also include information on the store, outlet, or website where each item was purchased.

Improving efficiencies on FoodAPS with online food logs, Laurie May (Westat) <https://www.bls.gov/cex/foodaps.pdf>

USDA's National Household Food Acquisition and Purchase Survey (FoodAPS) is the first nationally representative survey of American households to collect unique and comprehensive data about household food purchases and acquisitions. Detailed information was collected on foods purchased or otherwise acquired for consumption at home and away from home, including foods acquired through food and nutrition assistance programs. FoodAPS collects data using paper diaries on all food spending in a household with the most recent data available to the public, collected from 2012–13. The food categories are similar to those in the CE Diary Survey, but the purpose of the survey differs from the CE Diary, as does its sample design. Ms. May presented results from a pilot test for the FoodAPS that tested the use of an online log of food expenditures that would replace paper diaries. The pilot test involved an online 7-day food diary, available to respondents through an app on their own mobile device or a loaner device provided by Westat. Respondents could access the food diary through a computer with a barcode scanner or via smartphone app. Various features were tested, such as use of a scanner connected to the internet, the use of geocoding to minimize location errors, and respondent uploads of photographs of receipts. The system categorized food-at-home purchases versus food-away-from-home purchases, so that respondents did not have to classify them.

The pilot test was very successful and the technology used was not found to be a barrier to survey cooperation (only 3.5 percent of respondents declined the survey because of concerns with the technology). The data did not require as much editing as those from paper diaries. The average household time spent on the survey was 49 minutes per week. The use of scanning reduced data entry time per item by about 90 seconds compared with manual entry. However, an unexpected finding was that households with numerous purchases used scanning less

than households with only a few purchases. Compared with FoodAPS paper diaries, there was no improvement in item nonresponse and underreporting for the online diary pilot test. The pilot test also showed a drop-off in reporting as the week progressed, which is similar to what is seen for paper diaries. Respondents were able to successfully upload photographs of receipts, but coding these was challenging because receipt structure and naming conventions are not standardized across different types of stores, and very few receipts capture UPCs. Extracting data from receipts in real time has the potential to reduce respondent burden and improve data accuracy. However, receipt scanning software that can capture item-level information is scarce and none can do this task accurately in real time. Moving forward, USDA plans to implement an online diary with more reliance on receipts (as a check on reporting), but continue with manual entry of food purchases and acquisitions into the food log.

Key features of e-diary for the Household Expenditure Survey in Korea, Yeonok Choi (Statistics Korea)

<https://www.bls.gov/cex/ediary-korea.pdf>

Mr. Choi's presentation highlighted the major features of the electronic diary (e-diary) used in South Korea's Household Expenditure Survey. The e-diary was introduced as a way to make the survey less burdensome. Respondents are offered a choice of mode—e-diary or a paper diary. If respondents choose the e-diary, data are automatically transferred monthly; and if they choose a paper diary, data collectors go to the households to collect the monthly paper diaries. Diary keeping is for a 3-month period, with data transmitted to Statistics Korea monthly. An innovative feature of the e-diary is the ability of respondents to link their bank or credit card account data to diaries to facilitate data entry. To alleviate privacy concerns, the survey collector does not have access to general bank data, only to the data that respondents select to be transmitted.

Another feature of the e-diary is a built-in code-search engine to assist diary keepers with item classification, which helps reduce coding error. Additional features include an automated editing system that allows both diary keepers and interviewers to review entries, and online and mobile contact points that facilitate communication between diary keepers and interviewers within the system. These last two features also enable the interviewers to check the presence and progression of e-diary entries made and to prompt diary keepers with reminders throughout the diary keeping period.

For respondents, the diary provides a detailed spending analysis as a nonmonetary incentive. The main advantages of the e-diary are a reduction in both collection cost and nonsampling error. Disadvantages include a higher prevalence of rounding in reporting and incomplete reporting, as well as an adverse effect on survey participation by some older age groups, perhaps due to their unfamiliarity with the technology.

Record use

The second session focused on the use of records to improve data quality. In the CE redesign, this will be done by providing respondents with aids like worksheets and checklists to help them keep track of records; redesigning the streamlined questionnaire to facilitate record use by including introductory wording or separate sets of questions for respondents using records; and providing a monetary incentive for record use.

The CEQ Worksheet: a respondent tool for streamlining the interview experience and improving data quality, Nhien To (BLS) <https://www.bls.gov/cex/ceq-worksheet.pdf>

This presentation focused on the CE Quarterly Interview Survey (CEQ) worksheet, a respondent tool designed to reduce respondent burden in the CEQ. Input from six census field representatives (FRs) was solicited prior to designing the worksheet in order to learn how they would implement a worksheet based on their own experiences with respondents. The front of the CEQ worksheet includes a brief message to the respondent explaining the purpose of the worksheet; the back of the CEQ worksheet includes several organized tables for respondents to record selected expenses. Based on the feedback solicited from FRs prior to the design, the worksheet includes expenses that are paid by month (such as housing and utilities) and items that are difficult to recall without records

(such as mortgage payments or car loan payments). It also includes a privacy statement requested by FRs. Items on the worksheet are listed in the order they are asked in the CEQ (not in the order of frequency of expenditure) to facilitate the respondent's use of the worksheet during the interview. The worksheet design was revised based on feedback from 52 field representatives. The revised worksheet was field tested to assess the feasibility and effectiveness of the worksheet and its impact on response rates, data quality, and respondent experience. The field test took place in the third quarter of 2018, with worksheets given to 600 respondents after their third interview to help them prepare for their fourth interview. Once data analysis from the test is completed, FRs will be fully debriefed and a report will be prepared. Based on the results of the test, decisions will be made on whether and/or how to implement the Worksheet in the CE Redesign and/or in current production.

The use of respondent records in collecting cost and utilization data on the Medicare Current Beneficiary Survey, Debra Reed-Gillette (MCBS) <https://www.bls.gov/cex/use-of-respondent-records.pdf>

The Medicare Current Beneficiary Survey (MCBS) is a continuous, in-person, multipurpose longitudinal survey covering a representative national sample of the Medicare population residing in the United States and Puerto Rico. Each sampled beneficiary is interviewed up to three times per year for 4 consecutive years to form a continuous profile of their healthcare experiences during their participation in the survey. MCBS collects information on the beneficiaries' health and experiences with the healthcare system and their healthcare expenditures and reimbursements. Respondents' records on their healthcare utilization, costs, and reimbursements are used to provide a total picture of the out-of-pocket costs for their healthcare expenditures.

Ms. Reed-Gillette's presentation described the record-use protocol for the MCBS. Extensive training on understanding the key elements of a large range of healthcare-related records and insurance records is conducted for both interviewers and respondents to aid in record collection. Interviewers, who often have no prior knowledge of the medical field, are trained on how to identify appropriate information from records. In addition, they are taught how to "bundle" a variety of records that relate to a health event that would make up the total cost of an event. During the first interview, the respondent is provided with instructions on the types of records to save for the next interview. Starting with the first interview, the respondent is trained to keep all relevant health-related documents. A planner is provided for respondents to use as a calendar to record all healthcare events, and a folder is provided to use in collecting all relevant records about the events. The information collected from these respondent records is used to estimate the total cost burden and utilization of healthcare for the calendar year for each Medicare beneficiary.

Does encouraging record use for financial assets improve data accuracy? Jonathan Eggleston (Census Bureau) <https://www.bls.gov/cex/encouraging-record-use.pdf>

Some experimental studies have found no significant reduction in measurement error from the use of records in reporting financial data; however, these studies also had small sample sizes. Dr. Eggleston used financial data from Wave 1 of the 2014 Survey of Income and Program Participation (SIPP) and administrative data from the Internal Revenue Service 1040 Tax Return (IRS 1040) to further investigate the efficacy of record use. The dependent variables in the study were the differences between SIPP and IRS values for each of three types of income—interest income, dividend income, and rental income. The predictors used to proxy for confounding factors in the regression analysis were the respondent's average time spent per question in the SIPP, item nonresponse rate for financial questions (in the SIPP and IRS), and the average amount of rounding in responses to financial questions (in the SIPP and IRS). The record use indicator variable was specific to the asset section of

the SIPP, where the income generated from the assets was recorded. Dr. Eggleston's study found that record use was associated with a 21 percent to 43 percent reduction in measurement error (using IRS 1040s as a benchmark), with only about a 2 percent increase in time to complete the survey (from 41.6 minutes to about 42.5 minutes). Record use was associated with spending an extra 3.5 seconds on each income-from-asset question in the SIPP. About 26 percent of respondents consulted records. Records were more effective at reducing measurement error for rental income as compared with interest income. While the data do not allow for testing various hypotheses, there is some indication that respondents did not usually have earned interest amounts stored in their memory, even during tax season.

Improving data quality through questionnaire design

The third session focused on questionnaire design. Improving data quality is the main goal of the CE redesign. A key element of the CE redesign is the streamlined questionnaire being developed for the CE Interview Survey, which will have more aggregation of items and a record use focus in certain sections.

Revising the CE Surveys to collect outlets, Erica Yu (BLS) <https://www.bls.gov/cex/outlets.pdf>

A major change being made to the current CE is the addition of new survey questions to collect data on point of purchase (i.e., information about the outlets or businesses where respondents spend money) for selected items in the Interview and Diary Surveys. In this presentation, Dr. Yu summarized the research that was done to prepare for this change and previewed the design of the outlet questions. The Consumer Price Index (CPI) uses a separate random digit dialing telephone point of purchase survey (TPOPS) to identify the stores and businesses where people buy goods and services. However, the TPOPS survey will be discontinued because of high costs and low response rates. The outlet point of purchase questions will be added to the existing CE surveys. The majority of the funds currently spent on TPOPS will be used to increase the CE sample size to provide more assurance of a large enough sample of outlets from CE collection of point of purchase information. Sample size increases for both the Diary Survey and Interview Survey are planned for 2020.

Before proceeding with the inclusion of outlets in the CE, BLS researched the possible impact of adding outlet questions to the CE. BLS expected that adding questions on outlets would not only increase respondent burden, but also might affect the survey experience as a whole. Another concern was that changing the context of the questions to focus on where the item was bought rather than how much was spent would affect data quality. From the CPI perspective: would the new data be comparable to the original source, and would the CE survey yield satisfactory data? Another challenge with adding the outlet questions to the CE (as opposed to collecting the data via TPOPS) is that the TPOPS and CE are different from each other in definitions of item categories, reference periods, sample sizes, and mode, and also have different materials and aids.

Initial exploratory lab studies found that adding outlet questions was feasible and did not negatively affect data quality or perceived respondent burden. Researchers found that the optimal format varies by survey—a transaction-based format worked better for the Diary Survey and an item-based format for the Interview Survey.³ In 2016, the outlets questions were added on a limited basis to evaluate data quality and objective burden. CE found that the additional outlet questions increased the interview time by about 40 seconds per item category (e.g., televisions, men's suits, or gasoline). However, including them could potentially improve CE data quality by

providing information that could be used during the data review process for remapping expenses that had been put in the wrong category.

Another concern was that CE surveys might yield too little outlet data used by the CPI program for Commodities and Services sample collection design. Exploratory online studies were being conducted at the time of the symposium to test questions and collect more data. Outlet questions are being added to the 2019 Interview Survey that will ask for the name of the business and purchase mode and the city and state where the outlet is located for in-person (as opposed to online) purchases. These questions will be added to a given household's interview on a rotating basis, to limit how many of these questions a respondent gets asked during an interview. For example, one consumer unit would only be asked about outlets for apparel and vehicles, while another would be asked about outlets for entertainment and household appliances. For the 2019 Diary Survey, outlet information is being collected for each selected item reported in an additional column in the diary. For restaurant meals, the Diary Survey emphasizes the "restaurant or vendor" right at the beginning to get a transaction-level report—one entry for the full meal. Outlets are not being collected for clothing, shoes, jewelry, or accessories until the current diary instrument can be redesigned to accommodate this additional field. In the meantime, outlet information for the clothing category will still be collected in the Interview Survey.

MEPS: provider lookup enhancement, Marie Stagnitti (AHRQ) and Angie Kistler (Westat) <https://www.bls.gov/cex/meps-lookup-enhancement.pdf>

Ms. Stagnitti highlighted the enhanced provider lookup feature used in the Blaise instrument of the Medical Expenditure Panel Survey's (MEPS) Household Component (MEP-HC). There were three goals of the enhanced provider lookup. The first was to reduce the cognitive burden of response, which was achieved by a single string, Google-style search that does not require pre-specified search parameters. The second was to reduce response errors, which was achieved by having an interview-specific, tailored provider directory database reside on the Blaise instrument laptop (CAPI) so that data are pulled directly from the directory. The final goal was to simplify the administration of the interview to lower costs. Ms. Kistler concluded the presentation with a live demonstration of the enhanced provider lookup.

Using historical MEPS data, the MEPS team found 97 percent of medical providers to be within a 100-mile radius of the respondent. Subsequently, they prelimited the scope of the Google-style search by loading only provider names within a 100-mile radius of the respondent's zip code onto the laptops. With the lookup feature, the researchers found a 76 percent match rate for medical providers, which is an improvement from the 60 percent prior to adding the feature. Ms. Stagnitti noted that the match rate could be higher, but interviewers sometimes do not follow through with the search or selection of specific providers, and that this needs to be addressed in training.

Multiphase pretesting during a survey redesign, Mary Davis (U.S. Census Bureau) <https://www.bls.gov/cex/multi-phase-pretesting.pdf>

This talk focused on multiphase pretesting for survey redesigns, specifically cognitive and usability testing for the National Teacher and Principal Survey. The survey includes questions for principals and teachers about their school and their work. Ms. Davis highlighted how cognitive testing must be an iterative process and does not guarantee a perfect question at the end of the process. As an example, in a question asking teachers about instructional time (which is typically overreported), the exclusionary statement (of what not to include in "instructional time") needed to be pulled into the main question stem. Doing so helped limit overreporting. Ms.

Davis emphasized the importance of iterative cognitive testing of survey questions. She recommended that early rounds of testing need a small number of participants relative to later rounds of testing, as “big problems” tend to surface early. Later rounds need more participants to find more nuanced issues with questions. She recommended doing at least three, but ideally four or five, rounds of cognitive testing.

Innovations in expenditure data collection

In the past few years, there have been many technological advancements in data collection. Some of these innovations, relevant to expenditure data collection, were discussed in the final session of the symposium.

Making audit trails accessible for the CE Quarterly Interview Survey, Brandon Kopp (BLS) <https://www.bls.gov/cex/audit-trails.pdf>

This presentation summarized work that the CE program has been doing to make audit trail files from the CEQ more accessible to internal researchers. Audit trails are records of all navigation and data transactions within the CE interview survey instrument, every move from one field to another, and every value typed in. These are built into the Blaise programming language, and raw audit trail files are provided for each case for a given month. These audit trails provide information about keystrokes entered into the questionnaire while the interview is being conducted. From these paradata, we can derive information about how the interview was conducted, including time taken to answer each question, changes to the answer, errors, help materials accessed, and whether the interviewer came back to a question later. Audit trails are difficult to work with because, in their native format, they are rows of unstructured text. Mr. Kopp worked on making audit trails accessible by parsing them (i.e., converting these text files into tabular structure—form tables, case tables, field tables, action tables, and error tables). He demonstrated how these tables can be linked and analyzed. The audit trail tables are being developed as a resource for CE staff and are not available to the public.

The use of receipts in the Survey of Household Spending diary, Tom Haymes (Statistics Canada) <https://www.bls.gov/cex/use-of-receipts-in-SHS.pdf>

Mr. Haymes’ presentation was about the Survey of Household Spending (SHS), the Canadian household expenditure survey. The SHS has both interview and diary components. Fifty percent of the interview sample gets selected for the diary survey. In 2010, the SHS introduced the use of receipts to collect expenditure diary information from households. The option to collect and scan receipts has the potential to reduce burden and increase flexibility for respondents. For the diary survey, respondents can provide transcriptions in a paper diary booklet, provide receipts, or both. Respondents tend to prefer providing receipts when there are a large number of smaller purchases, as with, for example, grocery shopping. Prior to capture, all receipts are manually reviewed by Statistics Canada staff to ensure they fall within the diary reference period, the transaction is approved, and there is no duplication both within receipts and between receipts and diary transcriptions. Diary booklet entries and receipts are scanned into two separate files, and the information is coded at Statistics Canada. The booklet information is captured using optical character recognition, while receipts are currently captured manually from the scanned images. Variation in receipt formats have so far made automatic capture unattainable, but recent technological advances have made automatic capture possible. Illegible receipts are rare and are flagged for imputation. Coding assigns one of more than 650 SHS codes to each item to classify the expenditure. An automated process matches each description to a data dictionary containing common item descriptions with corresponding SHS code. This currently requires an exact match. Items that cannot be automatically coded or

matched are coded manually. Mr. Haymes also highlighted the advantages of using receipts in SHS collection. Respondents who provide both receipts and transcriptions provide the highest amount of expenditures and largest number of items. Another benefit is that less imputation is required for data from receipts compared with transcription.

Do fences make good neighbors? A side by side comparison of RDD and geofencing, Matt Jans (ICF International) <https://www.bls.gov/cex/rdd-geofencing.pdf>

Dr. Jans presented an example of how nonprobability sampling can be used in conjunction with probability sampling to create population estimates of public health and economic topics. Using the MFour's *Surveys On the Go*® mobile opt-in panel, which includes geofenced⁴ grocery, convenience, and liquor stores nationwide, the study aims to obtain representative population estimates using a nonprobability sampling method. It also serves as a proof-of-concept of in-store and in-home image capture as part of a survey protocol. With the Behavioral Risk Factor Surveillance Survey (BRFSS) as a benchmark, this study involves surveying MFour panel members who cross a 50-meter geofence placed around the entrance to the stores used in the study. When a panel member crosses a geofence, regardless of whether they are shopping at that store, the MFour app on their phone makes a “cha-ching” sound like a cash register, announcing a new survey to complete and the incentive amount for the survey. Survey participants are asked to answer about 10 minutes of questions and take an in-store picture of an alcohol, tobacco, or sugar-sweetened beverage display, or other display if those listed are not available. The app also reminds nonrespondents to complete the survey after 1, 24, and 36 hours. Since the MFour panel is slightly skewed toward younger adults and single respondents, ICF International is drawing a census-balanced sample of panel members and making poststratification adjustments to obtain representative estimates. Beyond public health, the study has implications for price and expenditure measurement, for example, by asking respondents to record the prices of items in the store and details about their purchases. More detailed study results are planned for 2019.

Summary of symposium

The CE program office is grateful to the external presenters who shared their experiences on key topics that the CE program is considering. The 2018 Symposium served as a channel for discussing and exchanging ideas to help the CE program move closer to achieving its overall redesign goals. The key takeaways from those discussions for CE include the following:

- An interesting finding from the sessions on online diaries and innovations was the importance of developing an efficient method to capture information from receipts. The FoodAPS online diary app asked respondents to photograph receipts and later coded them, while Statistics Canada has developed a methodology to scan and code receipts. There are technological limitations in automating and coding receipts in real time that need to be addressed in order to improve efficiency. Receipt scanning is something CE is currently investigating, as it has the potential to reduce burden and increase flexibility for respondents, especially if they are making a large number of purchases at a single store.

- Dr. Eggleston’s presentation indicated that record use can improve data quality by considerably reducing measurement error for reported asset income collected in the SIPP. However, record use also increases interview length. In addition, record use presents many challenges for both respondents and interviewers. The presentation on MCBS emphasized the importance of training, both for the interviewer and the respondent. Respondents need to know which records to save, how to organize them, and how to draw important information from them. These are important elements for CE to emphasize in the redesign protocols and materials for collecting records-based data in the redesigned streamlined questionnaire.
- The presentations on using apps and geofencing highlighted the importance of GPS and other technological innovations that could enhance the usability and data quality from mobile diaries in the future. For instance, CE could explore the use of apps with GPS or geofencing capabilities to prompt respondents to report expenses in their online diaries when they are at a shopping outlet, or passively collect shopping outlet information for purchases.
- Exclusion wording—instructions to respondents on what *not* to include while answering a survey question—is often used in CE questions. Based on many rounds of cognitive testing, Mary Davis’ presentation recommends putting exclusion wording in the main question stem to avoid overreporting. The CE program should keep this in mind as a best practice when developing questions for the streamlined CAPI instrument.
- The Stagnitti-Kistler presentation focused on a database lookup feature in the Blaise instrument that was used in MEPS to look up medical providers. This feature reduced response errors and could potentially reduce cognitive burden for respondents by enabling a single-string, Google-style search of providers. This is relevant for CE because the survey also uses a Blaise instrument. This feature could potentially be used in the CEQ instrument to facilitate collecting the outlet name, insurer name, or other information where the list of options can be customized from a database.

Microdata users’ workshop

Meet with an expert: Held in 2017, the 12th annual workshop included an innovation called the “Meet with an expert” program. The purpose was to provide an opportunity for attendees to have in-depth, one-on-one meetings with members of the CE staff, wherein the attendees could ask questions and receive comments or other guidance about the projects in which they were engaged. Attendees were able to sign up for a meeting by checking a box on their registration forms. They could also sign up at the registration desk throughout the workshop. However, the main benefit—both to attendees and CE staff members—of advance registration was to allow the meetings coordinator time to find the most appropriate expert, and time for the expert to investigate the question or prepare other information (handouts, etc.) before the meeting to optimize the quality of the session.

Based on comments from participants, the program was a great success. Therefore, it was repeated in the 2018 workshop. Several attendees arranged meetings by registration form, email, or onsite forms, and the planning team received positive comments on the program. In fact, in a feedback form submitted after the workshop, one participant described it as “the most useful part” of the workshop.^[5]

The program is being continued for the 2019 Microdata Users’ Workshop. Once again, attendees are able (and encouraged) to arrange meetings via registration form, email, or onsite.

Day one: The first session of the 2018 workshop consisted of presenters from the CE program. After welcoming remarks by Branch of Information and Analysis (BIA) Chief Steve Henderson, Program Manager Adam Safir provided an overview of the CE, featuring topics including how the data are collected and published. Economist Jimmy Choi then presented an introduction to the microdata, including how they can be used in research and the types of documentation about them available to users. Economist Arcenis Rojas completed the session with a description of data file structure and variable naming conventions.

After a break, attendees received their first practical training with the data. In this session, they learned basic data manipulation, including how to compute means from the microdata for consumer units with different characteristics (e.g., by number of children present).

Following a lunch break, Senior Economist Aaron Cobet (BIA) explained the need to balance confidentiality concerns of respondents with usefulness of the data to researchers. Because of Title 13, the U.S. Code that requires confidentiality of response, information that might potentially identify specific respondents must be removed from the CE data before they are released publicly. Some identifiers are direct, such as names and addresses. Others are not direct, such as extremely high expenditures or make and model of automobile(s) owned.

Mr. Cobet explained the methods used in the production of the CE microdata files to address these concerns. The first method, called “topcoding,” involves reported values for income or expenditures that exceed a certain threshold, called the “critical value.” These values are replaced by an average of all values exceeding this threshold and then “flagged” as topcoded (or “bottom-coded,” in the case of large income losses).[6] He also explained recoding, in which data are either made less precise (e.g., if the owned automobile was produced in 1999, the year is replaced with the decade of manufacture [1990s in this example]) or changed in another way (e.g., state of residence is changed from Delaware to New Jersey) to preserve both comparability and confidentiality. Mr. Cobet next explained suppression, in which reported values are removed from the data set. In some cases, only specific information is suppressed on a record (e.g., details of a specialized mortgage). In other cases, the entire record is removed (e.g., report of a purchase of an airplane).[7] Finally, Mr. Cobet talked about methods to eliminate “reverse engineering,” a process through which the user could deduce protected information from other information provided in the publicly available files.[8]

Following this presentation, practical training resumed with a project designed to obtain sample means based on detailed data on educational expenditures derived from various files.[9] Attendees also learned how to integrate results from the Interview and Diary Surveys to match expenditure categories in CE published tables.

Presentations from researchers not affiliated with the CE program completed the afternoon activities. (Note that summaries of the papers presented by outside researchers are included at the end of this Conference Report.)

The first speaker, Ph.D. candidate Rosa Lee (The George Washington University)—the first in the discipline of public policy and public administration to address a CE workshop—spoke about her use of CE microdata to study expenditure patterns of the middle class.

The second speaker in this session was Ting Lan, a Ph.D. candidate in economics at the University of Michigan. Ms. Lan used data from both the Interview and Diary Surveys to assess relationships between monetary policy and consumer spending at different points of the income distribution when prices are sticky.

The final speaker in this session was Dr. Zheli He, an economist with the Penn Wharton Budget Model, an organization housed at the Wharton School of the University of Pennsylvania. Dr. He's work used CE data to investigate the relationship between the marginal propensity to consume (i.e., the share of each additional dollar that a consumer allocates to a particular good, service, or aggregated set of goods and services) and permanent income (i.e., a function of income actually received today plus expectations of income to be received in the future). Dr. He also included net worth and consumer unit characteristics (age of reference person, etc.) in her estimation of permanent income.

Each of these studies used income in increasing degrees of complexity. For example, the first two presentations used total income before taxes to categorize consumer units into groups (e.g., the "middle class"). The third used a historical series of income after taxes as a dependent variable in regression analysis, the results of which were used to estimate permanent income.

As these presentations demonstrate, the use of income data from the CE is frequent, as the relationship between expenditures and income is self-evident. However, as in many household surveys, income data are subject to nonresponse, which can cause bias in estimates of all types—from simply assigning a consumer unit to the wrong income category to incorrect parameter estimates in regression. The same caveat applies to tax data, from which estimates of income after taxes are derived.[10]

For this reason, Dr. Geoffrey Paulin, a senior economist in the CE program (BIA) and leader of the CE income imputation team since its inception, served as discussant for this session, marking the first time a workshop session featured a formal discussant. He explained the history of the treatment of income data, noting how publication procedures changed with processing of data collected in 2004, when multiple imputation of income was introduced.[11] He noted that multiply imputed data require special techniques for proper analysis, whether computing a mean, variance, or regression coefficient for a multiply imputed variable such as income in CE. (See "Users' Guide to Income Imputation in the CE," <https://www.bls.gov/cex/csxguide.pdf>, for details.) He also explained recent improvements in the processing of income tax data. No longer relying on respondents to report values, these data are now (since publication of results collected in 2013) estimated based on reported (or imputed) income before taxes.[12]

Following Dr. Paulin's discussion, the afternoon concluded with a networking opportunity for attendees. The event was an informal gathering both to allow them to meet each other and to initiate or renew contacts with staff of the CE program.[13]

Day two: The second day opened with more advanced topics. First, statistician Brian Nix of the BLS Division of Price Statistical Methods (DPSM) presented technical details about sampling methods and construction of sample weights. Next, statistician Barry Steinberg (DPSM) described a project on which he has worked with co-author Sally Reyes Morales (DPSM) to implement changes to CE consumer unit population weight processing, based on results of the 2010 Census. The concluding presentation of this section featured economist Taylor Wilson (BIA) presenting the introduction of experimental weights for estimating state-level expenditures with the use of the CE microdata. He noted that weights for New Jersey, California, and Florida were available (<https://www.bls.gov/cex/csxresearchtables.htm#stateweights>). Mr. Wilson also presented the criteria used by the CE division to assess the feasibility of devising weights for other states.

Following a break, practical training resumed. In this training, attendees learned how to obtain information on nonexpenditure characteristics, such as type of school attended, associated with certain educational expenditures, using detailed PUMD files.[14]

They also received an introduction to the procedures needed to obtain consumer-unit-population weighted averages for expenditures; that is, instead of computing mean expenditures from the sample itself, how to apply weights to estimate mean expenditures for the consumer unit population as a whole. [15]

Following this training, Dr. Paulin introduced an informal panel consisting of two economics students, each of whom had used the Diary Survey to study expenditures for food at home.[16] The first speaker was Lacey Wilson, an undergraduate student from the University of South Carolina. Her research examined whether adults of different ages purchase different types of foods based on the USDA healthy eating recommendations that were in effect when they were in their formative years. The second speaker, graduate student Yiting Lan (The Ohio State University), presented her work investigating whether temporary increases in benefits in the Supplemental Nutritional Assistance Program (SNAP) enacted in 2009 were associated with increased purchases of fresh fruits and vegetables.

After a break, Terry Schau, managing editor of the *Monthly Labor Review* (MLR), described the MLR publication process, from submission to posting, for authors interested in having their work appear in the MLR.

Following this presentation, Dr. Paulin described the correct use of sample weights in computing consumer unit population estimates. He noted that the proper use of weights requires a special technique to account for sample design effects that, if not employed, results in estimates of variances and regression parameters that are incorrect. He also mentioned a topic of perennial interest to CE microdata users: caveats concerning the use of data only from respondents who complete all four interviews of the Interview Survey.[17] This led into a practical training session devoted to computing weighted results in two projects: one related to computing results for collection year estimates, and the other for calendar year estimates. The distinction is that collection year refers to the date on which the respondent reported the expenditures to the interviewer while calendar year refers to the period in which they actually occurred. For example, for a person participating in the Interview Survey in January 2017 who reports expenditures that occurred during the final three months of 2016 (October, November, or December), the expenditure collection year is 2017, while the expenditure calendar year is 2016.

The afternoon concluded with two presentations by non-BLS attendees. The first presentation, by Ph.D. candidate Karim Nchare (Penn State University), described empirical work testing the implications of the “normality” assumption in demand for goods. That is, economists define “normal” goods as those for which quantity demanded increases as income increases (given no change in price). An example of why understanding normality is important is to anticipate demand effects of rising or falling prices for a good or service due to policy changes, such as changes in taxes on food. The second presentation, by Dr. Michael Conte (RegionalOneSource), described the development of a website that will combine data from CE and the American Community Survey (a product of the U.S. Census Bureau). The website will enable users to ascertain the buying power (as measured by income after taxes) and the dollar value of spending by consumers on various types of goods and services within user-defined geographical boundaries as large as the U.S. or as small as a census tract or block group.

Day three: The final day started with CE staff discussing advanced topics. First, Economist Barbara Johnson-Cox of the Branch of Production and Control (P&C) explained how sales taxes are applied to expenditure reports during the data production process. Then, Economist Clayton Knappenberger (P&C) spoke about imputation and

allocation of expenditure data in the CE. Finally, Taylor Wilson described the efficacy of normalizing expenditure and income data when performing regression analysis to achieve better results.[18] Specifically, the presentation described the use of “power” transformations (e.g., regressing the square root of expenditures on the cube-root of income) to achieve this goal.[19]

Next, a panel of two outside researchers, moderated by Dr. Paulin, addressed research related to transportation expenditures. The first panelist, Dr. David Poyer (Morehouse College/Argonne National Laboratory), previous attendee and first-time presenter, described his work investigating changes in ride-hailing and ride-sharing expenditures, such as taxi or similar services. He was followed by Dr. Jonathan Peters (College of Staten Island/University Transportation Research Center), who examined how expenditures on transportation are changing given changes in technology (e.g., smartphones with built-in GPS tracking services) and transportation services (new companies and products, such as Uber and Lyft, that compete with traditional taxi services, and Zipcar, that provides extremely short-term rental cars).

The panel was followed by the final presentations of the workshop. The first of these was a “sneak peek” of developments for CE publications and microdata. BIA Chief Steve Henderson noted several developments, including the addition of a new question, scheduled to start in 2019, to ask whether anyone in the consumer unit has previously served in the U.S. military. This question, which will supplement a current question asking whether anyone in the consumer unit is currently serving in the U.S. military, is being added in response to requests from different federal agencies regarding the economic status of U.S. veterans. Also in 2019, the CE will publish data at more refined geographic levels (census division in addition to current census region), and a new column on the (still new) generational tables (first published officially to reflect 2016 data) showing expenditures for the “post-Millennial” generation.[20]

Continuing the “sneak peek” theme, Dr. Paulin described work in progress within the CE program to impute data for assets owned and liabilities owed when the holding, but not specific value, of either is reported.

Following a lunch break, the workshop reconvened for a feedback session led by Dr. Erica Yu (BLS). In the session, attendees had the opportunity to provide comments on what they found most (or least) useful about the workshop, and to make suggestions for future events. The comments were overwhelmingly positive, with attendees agreeing that the balance of training and research presentations, along with the content of these presentations, were appropriate.[21]

The final training session was devoted to the computation of means, standard errors, and regression parameter estimates when using multiply imputed data, such as income in CE. In addition, those interested received an instruction manual for use of a computer program for SAS software users that is available with the microdata. This program helps CE microdata users to compute correct standard errors for means and regression results easily when using (1) unweighted nonimputed data, (2) population-weighted nonimputed data, and (3) multiply imputed income data, both unweighted and population weighted. Finally, a few attendees took one last opportunity to meet with an expert at this year’s workshop.

SYMPOSIUM AND WORKSHOP OF 2019

The next Survey Methods Symposium will be held July 16, 2019, in conjunction with the 14th annual Microdata Users' Workshop (July 17–19). Although the symposium and workshop remain free of charge to all participants, advance registration is required (<https://data.bls.gov/cgi-bin/forms/cex-registration>). For more information about these and previous events, visit the CE website (<https://www.bls.gov/cex/>) and under the left navigation bar, titled “CE PUBLIC USE MICRODATA,” look for “ANNUAL WORKSHOP.” For direct access to this information, the link is <https://www.bls.gov/cex/csxannualworkshop.htm>. Links to the agendas for the 2018 workshop (<https://www.bls.gov/cex/ce-2018-workshop-agenda.pdf>) and the 2018 symposium (<https://www.bls.gov/cex/ce-2018-symposium-agenda.pdf>) are also available on this web page. Both agendas include links to presentations delivered at the respective events.

Highlights of workshop presentations

The following are highlights of the papers presented during the workshop, listed in the order of presentation. They are based on summaries written by the respective authors.

Hyun Kyong “Rosa” Lee, Ph.D. candidate, The George Washington University, “Consumption patterns of the American middle class in major U.S. metropolitan areas” (Interview Survey), day one.

Does the middle class or upper class have distinctive consumption patterns? Consumption capacity is an important measure of class distinction, just as income data are. Although consumption capacity has been used for a definition of middle class in the developing world, its use for class studies is rare in developed countries, including the United States. Even among scholars who prefer income-based definitions, it is commonly accepted that income measure is not sufficient to operationalize the middle class, since the definition does not consider the consumption of the economic actor, according to various sources in the literature. This project aims to identify distinctive consumption by American households that fall into the middle class—defined as having income between 75 percent and 250 percent of the national median household income. This study utilizes Consumer Expenditure (CE) Survey Public-Use Microdata (PUMD) published by the Bureau of Labor Statistics to see whether middle-class households show distinctive consumption patterns relative to other class categories. The CE Interview Survey is an underutilized data source, which collects 95 percent of the total expenditures and income by households, on the topic of American middle class. Examining detailed data on educational expenses, mortgages and rent expenses, medical and health expenditures, and trips and vacation expenditures in the 2015 survey data, this work contributes to the understanding of how American middle-class households face different burden across the U.S.—focusing on major Metropolitan Statistical Areas. This paper calls for broadening class definitions

to include both income and consumption measures to a better standard of living and its impact on regional economic growth.

To address this, I replicate the CE “Average expenditure, share, and standard error” table for the three income categories: below-middle class, middle class, and above-middle class, in the same format in which BLS publishes. I mainly use eight Consumer Price Index Consumption basket categories, plus two more expenditure categories: vacation and personal insurance/pension/savings categories.

Ting Lan, Ph.D. Candidate, University of Michigan, “Price stickiness along the income distribution and the effects of monetary policy” (Interview and Diary Surveys), day one.

This project proposes and quantifies a novel mechanism through which monetary policy shocks have distributional consequences. By using the data from the Consumer Expenditure Survey (CE), we obtain expenditure shares across detailed product categories for households at different percentiles of the income distribution. Combining them with the item-level consumer price data from BLS and the price stickiness constructed by published authors, we document that the prices of goods consumed by high-income households are stickier and less volatile than those of goods consumed by middle-income households. This suggests that monetary shocks can have distributional consequences by affecting the relative prices of goods consumed at different points on the income distribution. We use a Factor-Augmented VAR (FAVAR) model to show that, following a monetary policy shock, the estimated impulse responses of high-income households’ consumer price indices are 22 percent lower than those of the middle-income households. We then evaluate the macroeconomic implications of our empirical findings in a quantitative New-Keynesian model featuring households that are heterogeneous in their income and consumption patterns, and sectors that are heterogeneous in their frequency of price changes. We find that: (1) the distributional consequences of monetary policy shocks are large and similar to those in the FAVAR model; and (2) greater income inequality increases the effectiveness of monetary policy, although this effect is modest for realistic changes in inequality.

Zheli He, Ph.D., Economist, Penn Wharton Budget Model, “Marginal propensity to consume out of permanent income” (Interview Survey), day one.

This paper provides an alternative method to calculate the marginal propensity to consume (MPC) for a given gender, race, education, and age group, as well as its variation across individuals within one of these groups. First, we provide a regression framework for analyzing the effects of individual attributes on total family income after tax using the Consumer Expenditure Survey. Second, we use the Panel Study of Income Dynamics to construct transition paths of these attributes over the life cycle, conditional on gender, race, initial education, and age. Finally, we use the estimated regression coefficients and the projected demographic profiles to measure family permanent income. The MPC is calculated by regressing consumption expenditures on income shocks and the permanent component of income, controlling for all attributes. We find that households typically spend 20 cents out of each dollar of income shocks. On the other hand, if one’s permanent income goes up by \$1, then their consumption expenditures go up by 1.8 cents. Interestingly, we also find that the MPC out of income shocks is not statistically different for people at different permanent income levels. To our knowledge, this paper is the first to take into serious consideration the changing individual characteristics when calculating permanent income, which provides us with a more accurate measure. Furthermore, our results have important implications for policies that aim

at increasing aggregate demand based on the assumption that low-income households have a higher MPC.

Lacey Wilson, Undergraduate, University of South Carolina, “U.S. dietary recommendations and grocery spending: a cohort analysis” (Diary Survey), day two.

During the late 1970s and early 1980s, foods with high levels of fat and cholesterol were purported to directly cause heart disease and targeted as unhealthy. Dietary recommendations from both the USDA and popular media during this time emphasized avoidance of these products. Previous studies show that individuals tend to retain beliefs learned during childhood; this study will address whether Americans who grew up during this period retained a tendency to avoid high fat and cholesterol foods. We use expenditure data from the Bureau of Labor Statistics’ Consumer Expenditure Survey to analyze the spending patterns of different generations in the context of dietary recommendations learned during primary school. Respondents are split into groups based on birth year, and we find group averages for percentage of total grocery dollars spent on various food items between the years 1996 and 2014. We find that individuals who were of primary school age during the late 1970s and early 1980s allotted a significantly lower percentage of grocery expenditures to eggs than did their older counterparts. These results imply that Americans who were recommended against consuming high-cholesterol foods during childhood may continue to consume less of those foods than do those who were not, regardless of a later change in those recommendations.

Yiting Lan, Ph.D. Candidate, The Ohio State University, “The impact of in-kind food benefit increase on consumption: evidence from the SNAP” (Diary Survey), day two.

The purpose of this study is to investigate the impact of Supplemental Nutritional Assistance Program (SNAP) benefit increases on participants’ purchase of fresh vegetables and fruits. In order to investigate the question, Consumer Expenditure Survey data of 2007 through 2011, when SNAP benefits experienced several large discrete increases, are used. The dependent variables include food at home (FOODHOME), fresh vegetables (FRSHVEG), and fresh fruits (FRSHFRUT). A dummy variable is used to indicate receipt of SNAP benefits in the past month. Demographic variables, including gender, age, race, family size, etc., are used as fixed effects. With the Consumer Expenditure Diary Survey data, the hypotheses include the following:

- Hypothesis1. SNAP households will increase their expenditure for food at home when their SNAP benefits increase. This is represented by an increase of weekly expenditure for food and nonalcoholic beverages purchased at grocery stores.
- Hypothesis2. SNAP households will increase the amounts of healthy foods purchased in the home when their SNAP benefits increase. This is represented by an increase of weekly expenditures for fresh vegetables at home.
- Hypothesis3. SNAP households will increase the amounts of healthy foods purchased in the home when their SNAP benefits increase. This is represented by an increase of weekly expenditures for fresh fruits at home.

To exclude the effect of macroeconomic change and test the impact from a SNAP benefits increase, a difference-in-difference design is used. The difference-in-difference design assumes that the treatment group and nontreatment groups experience similar trends if the treatment does not occur.

Karim Nchare, Ph.D. Candidate, Penn State University, “Testable implications of normality in stochastic demand for two goods” (Diary Survey), day two.

A good is normal if its consumption increases with income, keeping prices fixed. I derive the testable implications of normal demand in a two-goods setting where data are from a repeated cross-section, unobserved heterogeneity is completely unrestricted, and endogeneity of total expenditures is allowed. Using revealed preference restrictions, simple closed-form expressions characterize whether (population level) data are consistent with the normality assumption. I illustrate the empirical relevance of our theoretical results through an application to data drawn from the CE microdata.

Michael Conte, Ph.D., RegionalOneSource (ROS), “Using the Consumer Expenditure Surveys Microdata to estimate consumer spending and buying power at any level of regionality” (Interview and Diary Surveys), day two.

This presentation describes a project to combine data from two of the country’s most powerful survey databases—the American Community Survey (ACS) and the CE Public Use Microdata (CEPUMD)—to provide estimates of consumer spending and buying power for any U.S. geography, ranging from geographies as large as the entire country to those as small as a census tract or census block group. The authors of the research know of no data source that provides estimates of consumer spending in all areas of spending (for example, not just grocery store purchases) at sufficiently small levels of geographical specificity so as to be useful in preparing a typical business plan or a governmental or not-for-profit project plan. The question that this research seeks to answer is whether it is possible to “marry” the data from the ACS with the CEPUMD in order to provide such estimates.

David Poyer, Ph.D., Professor, Morehouse College/Argonne National Laboratory, “Tracking changes in ride-hailing/ride-sharing expenditures” (Interview Survey), day three.

The purpose of this research is to undertake an econometric analysis/assessment of household spending data with the specific objective of determining changes in the composition of transportation expenditures over time. Further, we analyze how changes in ride-hailing/ride-sharing expenditures (as measured by “local taxi and limousine expenditures” UCC code 530412) are dynamically related with other transportation expenditure categories (particularly vehicle expenditures).

Jonathan Peters, Ph.D., The College of Staten Island/ Research Fellow, University Transportation Research Center, “Just what do we actually know about household spending on transportation services and how are they changing in the 21st century” (Interview and Diary Surveys), day three.

U.S. households spend roughly 17 percent of their household income on transportation services. Yet, as BLS Senior Economist Geoffrey Paulin discussed in a recent *Monthly Labor Review* article [“Fun facts about Millennials: comparing expenditure patterns from the latest through the Greatest generation”](#) (March 2018), households of various generations are exhibiting different patterns of consumption with respect to transportation services. Millennial households are spending a greater percentage of household income on transportation (18.9 percent of household income) as compared with any other generation. In addition,

Millennials own far fewer automobiles (1.5 per household) as compared with Generation X and Baby Boomer households (2.1 and 2.2, respectively). This study looks to expand on prior work by Peters, King, Gordon, and Santiago to explore the component parts of transportation spending in the CE. In particular, we look to further study spending on road tolls, taxi type services, fuel use, mass transit fares, and the overall cost of automobile ownership. Results are segregated by income class, educational status, race, age, and household geographic location. A goal of the research was to understand the component contributors to household consumption patterns.

WORKSHOP PRESENTERS

Staff of the CE program

Choi, Jimmy. Economist, Branch of Information and Analysis (BIA); day one

Cobet, Aaron. Senior Economist, BIA; day one

Curtin, Scott. Supervisory Economist, Chief, Microdata Section, BIA; emcee and practical training sessions; days one, two, and three

Henderson, Steve. Supervisory Economist, Chief, BIA; days one and three

Johnson-Cox, Barbara. Economist, Branch of Production and Control (P&C); day three

Knappenberger, Clayton. Economist, P&C; day three

Paulin, Geoffrey. Senior Economist, BIA; days one, two, and three

Rojas, Arcenis. Economist, BIA; day one

Safir, Adam. Chief, Division of Consumer Expenditure Surveys; day one

Wilson, Taylor. Economist, BIA; days two and three

Other BLS speakers

Nix, Brian. Mathematical Statistician, Division of Price Statistical Methods (DPSM); day two

Schau, Terry. Managing Editor, Monthly Labor Review; day two

Steinberg, Barry. Mathematical Statistician, DPSM; day two

Yu, Erica. Research Psychologist, Office of Survey Methods Research; day three

Non-BLS speakers

Conte, Dr. Michael (Ph.D.). RegionalOneSource (ROS), "Using the Consumer Expenditure Surveys Microdata to Estimate Consumer Spending and Buying Power at any Level of Regionality" (Interview and

Diary Surveys); day two. Prior attendee (2012, 2014, 2016, and 2017) and presenter (2017); returning presenter (2018).

He, Dr. Zheli (Ph.D.). Economist, Penn Wharton Budget Model, “Marginal Propensity to Consume Out of Permanent Income” (Interview Survey); day one. First-time attendee and presenter (2018).

Lan, Ting. Ph.D. Candidate, University of Michigan, “Price Stickiness along the Income Distribution and the Effects of Monetary Policy” (Interview Survey); day one. First-time attendee and presenter (2018).

Lan, Yiting. Graduate Teaching Associate, The Ohio State University, “The Impact of In-Kind Food Benefit Increase on Consumption: Evidence from the SNAP” (Diary Survey); day two. First-time attendee and presenter (2018).

Lee, Hyun Kyong “Rosa.” Ph.D. Candidate, The George Washington University, “Consumption Patterns of the American Middle Class in Major U.S. Metropolitan Areas” (Interview Survey); day one. Prior attendee (2017); first-time presenter (2018).

Nchare, Karim. Ph.D. Candidate, Penn State University, “Testable Implications of Normality in Stochastic Demand for Two Goods” (Diary Survey); day two. First-time attendee and presenter (2018).

Peters, Dr. Jonathan (Ph.D.). The College of Staten Island/Research Fellow, University Transportation Research Center, “Just What Do We Actually Know about Household Spending on Transportation Services and How Are They Changing in the 21st Century” (Interview and Diary Surveys); day three. Prior presenter (2014 and 2017); returning presenter (2018).

Poyer, Dr. David (Ph.D.). Professor, Morehouse College/Argonne National Laboratory, “Tracking Changes in Ride-hailing/Ride-sharing Expenditures” (Interview Survey); day three. Prior attendee (2011, 2015, and 2017); first-time presenter (2018).

Wilson, Lacey. Undergraduate, University of South Carolina, “US Dietary Recommendations and Grocery Spending: A Cohort Analysis” (Diary Survey); day two. Prior attendee (2016); first-time presenter (2018). Note: Ms. Wilson was the first undergraduate student to present at a CE workshop.

SUGGESTED CITATION

Geoffrey D. Paulin and Parvati Krishnamurty, "Consumer Expenditure Survey Methods Symposium and Microdata Users' Workshop, July 17–20, 2018," *Monthly Labor Review*, U.S. Bureau of Labor Statistics, May 2019, <https://doi.org/10.21916/mlr.2019.11>.

NOTES

¹ Although a household refers to all people who live together in the same living quarters, “consumer unit” refers to the people living therein who are a family, or others who share in specific financial arrangements. For example, two roommates living in an apartment constitute one household. However, if they are financially independent, they each constitute separate consumer units within the household. Similarly, although families are related by blood, marriage, or legal arrangement, unmarried partners who live together and

pool income to make joint expenditure decisions constitute one consumer unit within the household. For a complete definition, see the CE glossary at <https://www.bls.gov/cex/csxgloss.htm>. For more information on households and families, see <https://www.census.gov/programs-surveys/cps/technical-documentation/subject-definitions.html#household>.

[2](#) The Quarterly Interview Survey is designed to collect data on expenditures for big-ticket items (e.g., major appliances or automobiles) and recurring items (e.g., payments for rent, mortgage, or insurance). In the Interview Survey, participants are visited once every 3 months for four consecutive quarters. In the Diary Survey, on the other hand, participants record expenditures daily for 2 consecutive weeks. This survey is designed to collect expenditures for small-ticket and frequently purchased items, such as detailed types of food (e.g., white bread, ground beef, butter, or lettuce). The CE microdata for both surveys may be downloaded from the CE website at https://www.bls.gov/cex/pumd_data.htm.

[3](#) In a transaction-based format, the respondent reports information for expenditures for all items that might appear on one receipt. For example, apples, bananas, and oranges may have been purchased in one transaction at the grocery store. An item-based format relies on specific things bought, regardless of date or number of transactions; for example, all apples purchased in the last three months, regardless of purchase venue, followed by oranges.

[4](#) Geofencing is the practice of using global positioning (GPS) or radio frequency identification (RFID) to define a geographic boundary. Then, once this “virtual barrier” is established, the administrator can set up triggers that send a text message, email alert, or app notification when a mobile device enters (or exits) the specified area.

[5](#) Since 2017, attendees who were either unable to attend the feedback session in person or who have had comments to share later were encouraged to provide them electronically. See “Request for Comments,” <https://www.bls.gov/cex/ceworkshophankyou.htm>.

[6](#) For example, suppose the threshold for a particular income or expenditure is \$100. On two records, the reported values exceed this: \$200 on record A and \$600 on record B. In this case, the value is topcoded to \$400 (the average of \$200 and \$600), and the reported amounts are replaced with \$400. An additional variable, called a “flag,” is coded to notify the data user that the \$400 values are the result of topcoding, not actual reported values.

[7](#) For details on topcoding and suppression, including specific variables affected and their critical values, see “2016 Topcoding and Suppression,” August 29, 2017, https://www.bls.gov/cex/pumd/2016/topcoding_and_suppression.pdf. Additional information is also provided in the public-use microdata documentation for the year of interest. (See, for example, “2016 Users’ documentation, Interview Survey, Public-Use Microdata (PUMD), Consumer Expenditure,” August 29, 2017, <https://www.bls.gov/cex/pumd.htm>.)

[8](#) For example, suppose a respondent reports values for two sources of income: (1) wages and salaries and (2) pensions. Further suppose the following: The reported value for wages and salaries exceeds the critical value, and is therefore replaced by the topcoded value of \$X; the reported value for pension income, \$Y, is below the critical value for this income source; and the value for total income is shown to be \$X + \$Y + \$Z. Because this respondent only has two sources of income reported and pension income is not topcoded, the reported value for wages and salaries is \$X + \$Z. To prevent this, total income must be computed after each individual component has been topcoded as needed. Therefore, in this example, total income is \$X + \$Y and the actual reported value of wages and salaries cannot be “reverse engineered.”

[9](#) The project involved finding and merging results from the FMLI, MEMI, and MTBI files. The FMLI files include general characteristics of the consumer unit (e.g., region of residence, number of members, etc.) and summary variables (e.g., total educational expenditures). The MEMI files contain information on each individual member of the consumer unit (e.g., each member’s age, race, educational attainment, etc.). The MTBI files include expenditures for specific educational expenses (e.g., expenditures on “College tuition,” “Elementary and high school tuition,” “Test preparation, tutoring services,” “School books, supplies, equipment for vocational and technical schools,” etc.).

[10](#) As expected, in the CE data, income after taxes is simply income before taxes minus taxes paid. However, as with income, the respondent may not know, or refuse to provide, tax data in whole or in part, compounding the problems associated with analyzing income before taxes.

[11](#) For data collected in 2003 and earlier, consumers were classified in income groups based on whether or not they were “complete income reporters,” in which generally, the respondent provided values for major sources of income, such as wages and salaries, self-employment income, and Social Security income. However, even complete income reporters may not have provided a full accounting of all income from all sources for all members of the consumer unit. For more details on this topic, see the CE glossary (<https://www.bls.gov/cex/csxgloss.htm>, accessed August 24, 2018). For information on how publications changed with the implementation of income imputation, see “Description of Income Imputation Beginning with 2004 Data” (<https://www.bls.gov/cex/csximpute.htm>, accessed August 24, 2018).

[12](#) For details about the process, see “Improving data quality in Consumer Expenditure Survey with TAXSIM,” by Geoffrey Paulin and William Hawk, *Monthly Labor Review*, March 2015, pp. 1–13 (<https://doi.org/10.21916/mlr.2015.5>, accessed August 24, 2018).

[13](#) Because the practical training is progressive, until 2011 this activity was held on the second day to maximize overlap in attendance between newer and more experienced users. However, in response to comments from attendees at prior workshops, in 2012 the activity was scheduled for the first day of the workshop and successfully repeated in this order subsequently.

[14](#) Specifically, attendees learned how to access the EDA files to ascertain for what type of school or facility (college or university, elementary through high school, child day care center, etc.) certain educational expenditures were incurred, and whether the expenditures were for a member of the consumer unit or a gift to someone outside of it.

[15](#) For example, suppose the sample consists of two consumer units, one of which represents 10,000 consumer units in the population (i.e., itself and 9,999 others like it) and another that represents 20,000 consumer units in the population. If the first spent \$150 and the second spent nothing (i.e., \$0), the sample mean expenditure is \$75. But the population-weighted mean is \$50, or $[(\$150 \times 10,000) + (\$0 \times 20,000)] / (10,000 + 20,000)$.

[16](#) In the CE, the term “food at home” generally refers to the location of purchase, not place of consumption, of the food. That is, according to the CE glossary, “Food at home refers to the total expenditures for food at grocery stores (or other food stores) ...” (<https://www.bls.gov/cex/csxgloss.htm>) Food purchased from restaurants, food trucks, vending machines, etc., are considered to be “food away from home,” even if they were taken home and eaten there.

[17](#) As noted in the introduction to the workshop, the Interview Survey collects data from respondents for four consecutive 3-month periods. During each interview, the respondent is asked to provide information on expenditures for various items during the previous 3 months. However, not all participants remain in the sample for all four of these interviews. Those who do remain have different characteristics (e.g., higher rates of homeownership and average age) than those who do not remain. Therefore, attempting to analyze average annual expenditures by only examining respondents who participate for all four interviews yields biased results.

[18](#) For example, normalizing the data can reduce heteroscedasticity in a regression framework.

[19](#) These transformations are often known as “Box-Cox” transformations, after authors G.E.P. Box and D. R. Cox, who wrote a seminal paper about them. (“An Analysis of Transformations,” *Journal of the Royal Statistical Society, Series B (Methodological)*, Vol. 26, No. 2 (1964), pp. 211–252.)

[20](#) At present, no consensus has emerged on a name for this group. The CE program has previously followed the nomenclature of the Pew Research Center, which officially defined this group as “post-Millennials” on March 1, 2018. For more information, see “Fun Facts about Millennials: comparing expenditure patterns from the latest through the Greatest generation,” *Monthly Labor Review*, March 2018, <https://doi.org/10.21916/mlr.2018.9>, esp. endnote 14; and a Pew Research Center report by Michael Dimock, “Defining generations: Where Millennials end and post-Millennials begin,” (<http://www.pewresearch.org/fact-tank/2018/03/01/defining-generations-where-millennials-end-and-post-millennials-begin/>).

[21](#) Attendees also appreciated the information provided in advance of the workshop, which helped in planning their travel, entry to the building, and anticipating what to expect while attending. For these and other details, see <https://www.bls.gov/cex/information-for-2019-workshop-attendees.pdf>.

RELATED CONTENT

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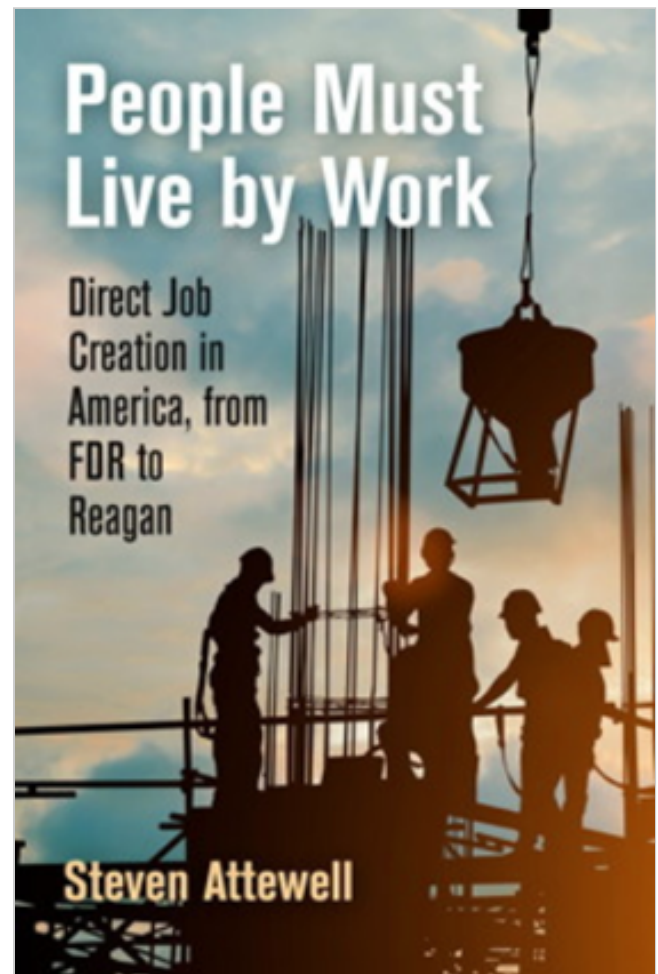
Direct job creation in the United States: learning from the past

People Must Live by Work: Direct Job Creation in America, from FDR to Reagan. By Steven Attewell. University of Pennsylvania Press, 2018, 336 pp., \$48.75 hardcover.

Steven Attewell's recent book *People Must Live by Work* is an insightful historical study of direct job creation policies in the United States. Although the problems of unemployment began in the early days of the Industrial Revolution, the author begins his study with the Great Depression of the 1930s. There were many job creation efforts in that period of U.S. history, and many people—from Presidents, to academics, to cabinet officials, to economists—had different ideas and opinions about them.

Direct job creation has many facets. Conservative ideas about it abound, and so do liberal ones, with strong convictions running deep on both sides. Attewell identifies several large categories of direct job creation, including “public works,” “relief works,” “work relief,” “job policy,” and “public employment.” These concepts, when connected to policy, have evoked strong opinions from those in leadership positions. For example, while campaigning for President, Ronald Reagan referred to the Humphrey-Hawkins Full Employment Act, which aimed to achieve full employment through government spending, as a “blueprint for fascism,” whereas Jimmy Carter, also a candidate for President, described the same bill as having “wide popularity.”

Tracing the history of direct job creation back to the Depression, Attewell dives into the wealth of information concerning not only policy actions but also the philosophies, thoughts, and motivations of policymakers. The ideas of these leaders emerged in a competitive



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political environment, and their work led to the creation of the Civilian Conservation Corps, the Works Progress Administration, the Public Works Administration, and other agencies of the Depression.

The goal of these agencies was to develop ways to alleviate the economic and psychological costs of unemployment. It became common for the government to provide work for semiskilled and unskilled workers. As time went by, this approach became a permanent federal policy, which was espoused by the executive staff of the Committee on Economic Security, a body founded by President Franklin D. Roosevelt himself. To end the Depression, many agencies were created to follow through on Roosevelt's promise to feed, clothe, nourish, and shelter those in need. Such policies, however, were not always popular. For example, in the early 1930s, President Herbert Hoover, a major doubter of the effectiveness of public works or work relief, vetoed a series of pro-labor bills submitted by Senator Robert Wagner, a Democrat from New York who remained an active player in later legislative battles.

The policy ideas of the Great Depression era were carried further along into the John F. Kennedy administration. After that era came the Great Society programs and the civil rights and labor movements of the 1960s, until there was a choice between Keynesian fiscal policies and Great Society welfare spending. The economics debate then turned to the Laffer curve, a new supply-side theory showing the relationship between tax rates and tax revenue. When President Carter came into office in early 1977, he adopted a more conservative fiscal approach, deviating from the liberal policies of previous Democratic administrations. In the late 1970s, the paths from different eras met, with policymakers having to choose between the political challenges of a balanced budget and their needs for a jobs policy (which had weakened over the years). Proponents of fighting inflation confronted those who wanted to control unemployment through public spending. Policymakers also faced the problems of stagflation, recognizing that such a phenomenon could actually exist. What followed was the election of President Reagan, whose conservative fiscal policies instituted in 1982 enjoyed "bipartisan support in the 1980s." The book continues with a discussion of the employment policies adopted by the administrations of George H. W. Bush, Bill Clinton, George W. Bush, and Barack Obama.

In his analysis, Attewell suggests that Keynesian theory's multiplier effect—which posits that government spending props up employment—can motivate policy on both sides of the political spectrum. Research on the implications of this effect, whose promise to deliver economic rewards has been accepted by many academics and policymakers, has shown that increases in investment greatly contribute to aggregate demand. The author also suggests that any further discussion of direct job creation should take into account the employment conditions in specific jobs and industries, along with the relationships among those jobs and industries. Direct job creation, job training, and acceptable natural rates of unemployment cannot be pursued without a common measure of success.

Even if common ground between competing policy approaches can be found, the questions of who, what, how, why, where, and when will likely remain. Attewell states that, throughout U.S. history, there have been a number of policies that have succeeded in tackling the tough problems of unemployment, but that these successes are now mostly forgotten. In his view, it is worth including these policies in current debates about job creation, before our memory of them fades away completely.

Employment growth accelerates in 2018, extending a lengthy expansion

In 2018, total nonfarm payroll employment continued its lengthy expansion, which began in May 2014. The overall pace of employment growth during the year was slightly faster than that in 2017 and 2016. Job growth in 2018 remained strong in goods-producing industries and accelerated in service-providing industries.

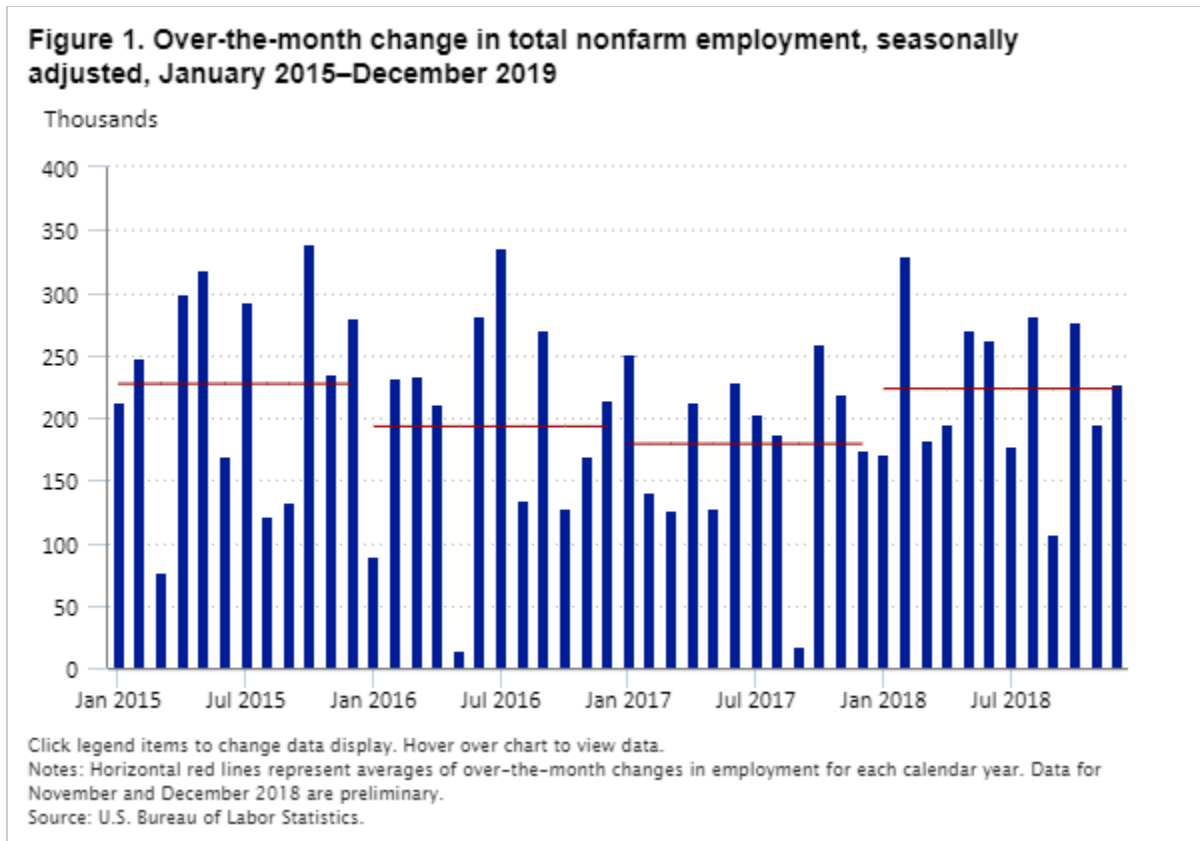
According to data from the U.S. Bureau of Labor Statistics Current Employment Statistics (CES) survey, nonfarm payroll employment in the United States grew by 2.7 million in 2018, an average monthly gain of 223,000 jobs.¹ This monthly job growth was faster than that in 2017 (+179,000) and 2016 (+193,000), but slightly slower than that in 2015 (+227,000). (See figure 1.)



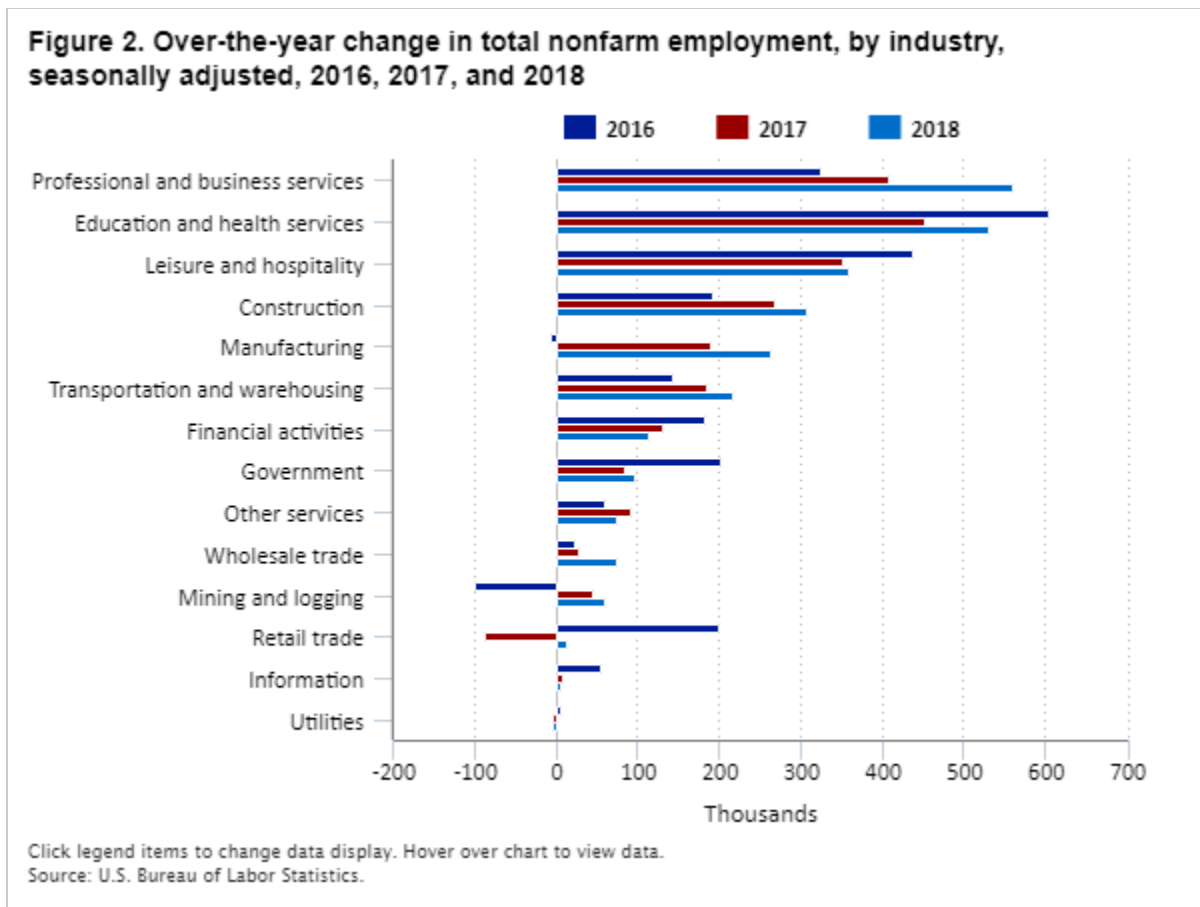
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Most major component industries within the total nonfarm sector experienced employment growth in 2018. (See figure 2.) This strength is evident in the 1-month total private and manufacturing diffusion indexes.² Over the year, the total private index averaged 64.6 and the manufacturing index averaged 63.9, indicating especially strong, broad-based employment growth. The last time these series performed so well was in 1997, when the total private index averaged 71.9 and the manufacturing index averaged 65.7.



Leading the broad-based employment gains were professional and business services and private education and health services, both of which added more than half a million jobs over the year. Leisure and hospitality, construction, and manufacturing also experienced employment growth. A notable change occurred in the retail trade industry, whose employment dropped by 88,000 in 2017 but was essentially unchanged (on net) in 2018. Overall, most of the major component industries added at least as many jobs in 2018 as in 2017.

Employment gains in 2018 coincided with predominantly strong economic indicators. (See table 1.) However, 2018 had its fair share of headwinds as well, including two major hurricanes,³ devastating wildfires,⁴ a tight labor market,⁵ and a tumultuous trade environment.⁶

Table 1. Over-the-year percent change in selected economic indicators, 2016–18

Indicator	Percent change		
	2016	2017	2018
Real gross domestic product ⁽¹⁾	1.6	2.2	2.9
Real personal consumption expenditures ⁽¹⁾	2.7	2.5	2.6
Real gross private domestic investment ⁽¹⁾	-1.3	4.8	6.0
Real disposable personal income ⁽¹⁾	1.7	2.6	2.9
Industrial Production Index ⁽²⁾	0.5	2.9	4.1
Trade-weighted U.S. dollar index (broad index) ⁽¹⁾	4.6	-0.3	0.7

See footnotes at end of table.

Table 1. Over-the-year percent change in selected economic indicators, 2016–18

Indicator	Percent change		
	2016	2017	2018
Crude oil prices: West Texas Intermediate ⁽¹⁾	39.7	11.4	-14.4
New one-family houses sold in the United States ⁽¹⁾	12.0	9.3	1.5

Notes:

⁽¹⁾ Annual, not seasonally adjusted.

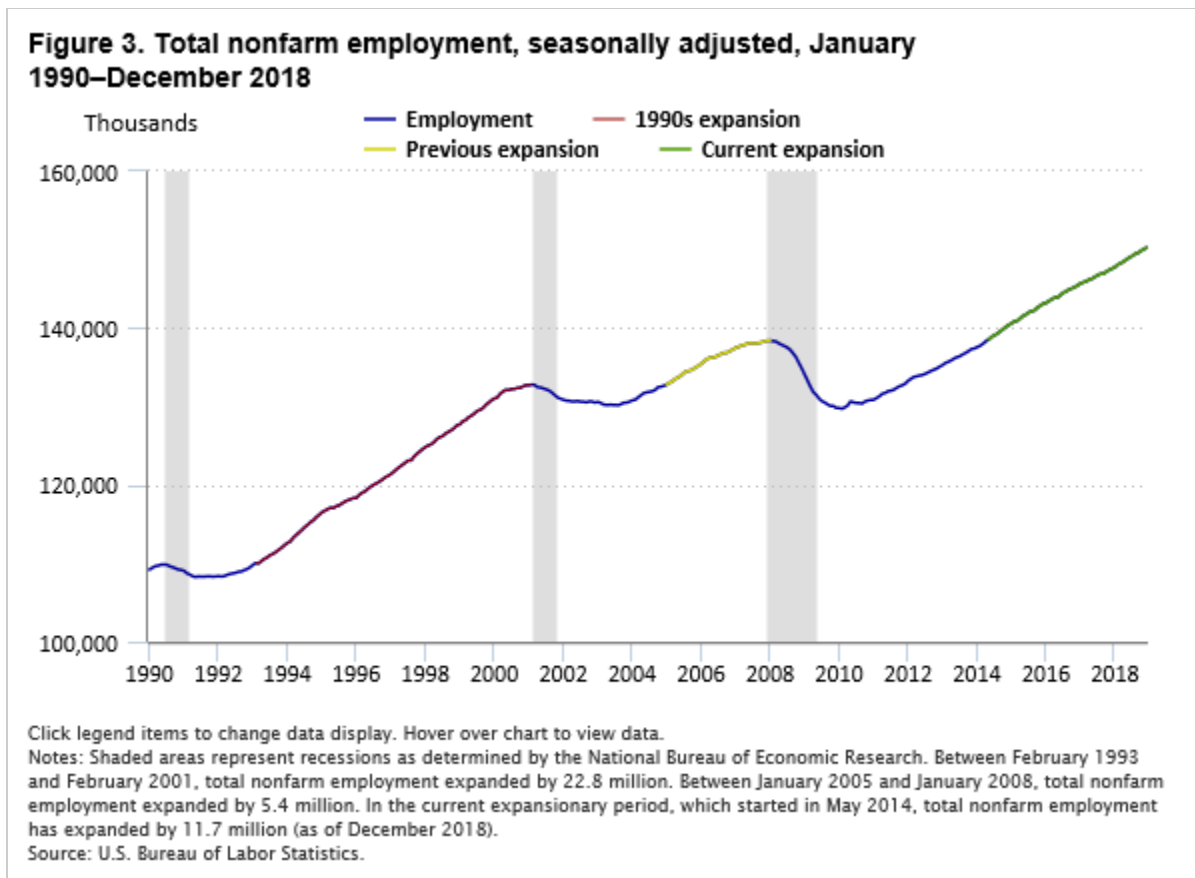
⁽²⁾ Annual, seasonally adjusted.

Sources: U.S. Bureau of Economic Analysis, Board of Governors of the Federal Reserve System, U.S. Energy Information Administration, and U.S. Census Bureau.

Year-over-year growth in real gross domestic product accelerated to 2.9 percent in 2018, compared with 2.2 percent in 2017 and 1.6 percent in 2016. Real personal consumption expenditures ticked up by 0.1 percent, to 2.6 percent, indicating some gradual pickup in inflationary pressures. The Industrial Production Index increased to 4.1 percent in 2018, following strong growth of 2.9 percent in 2017. These increases coincided with employment strength in durable goods manufacturing in both years, with the industry adding 215,000 jobs in 2018 and 125,000 jobs in 2017. In 2016, the Industrial Production Index increased by only 0.5 percent, and during the same year, employment in durable goods manufacturing declined by 56,000.

Continued employment expansion in 2018

Since May 2014, the recovery point of the most recent recession, nonfarm payroll employment has expanded for 56 consecutive months, adding over 11.7 million jobs.⁷ (See figure 3.) By comparison, the longest employment expansion in CES history began in February 1993, lasted nearly twice as long (96 months), and added almost twice as many jobs (22.7 million).

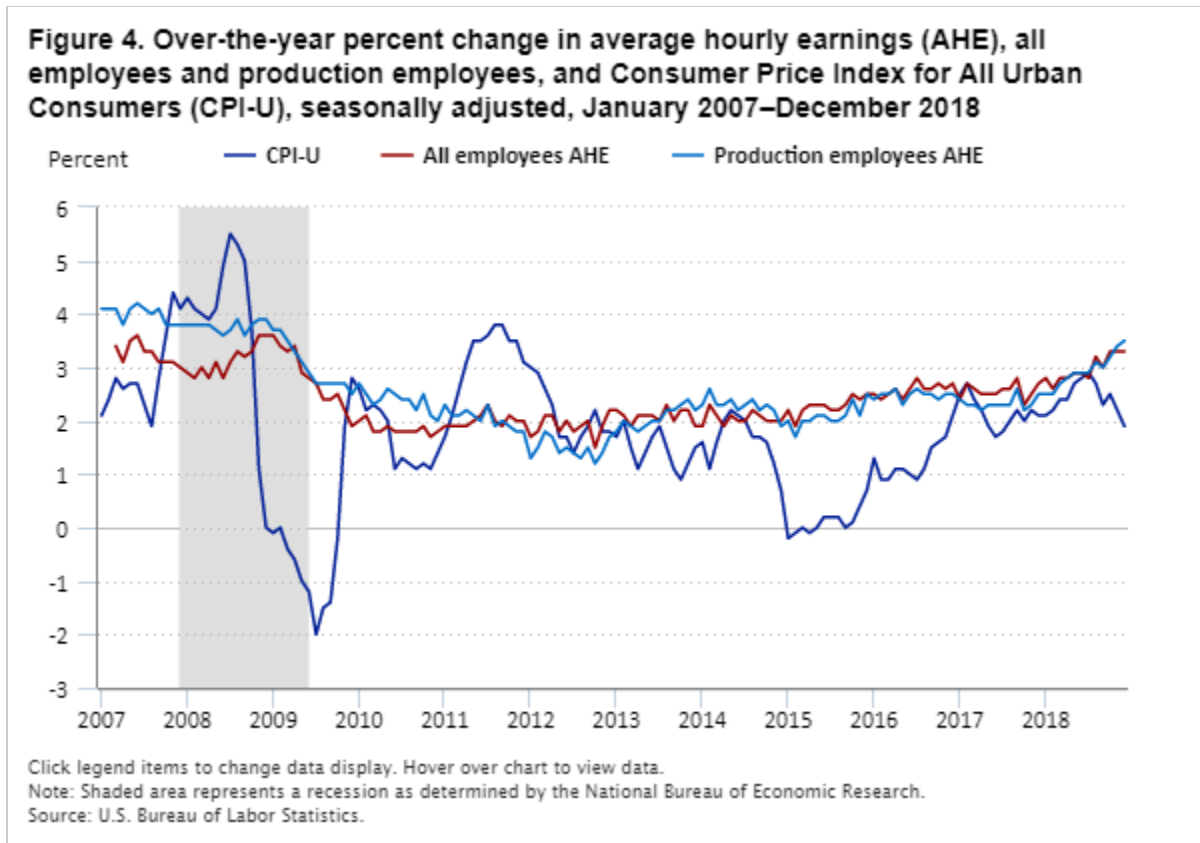


Hours and earnings

Average weekly hours for all employees on private payrolls remained flat in 2018, staying within the range of 34.4–34.5 hours the entire year. Average hourly earnings, however, advanced by \$0.89, to \$27.53, for all employees on total private payrolls, a gain of 3.3 percent. Not surprisingly, given the unchanged workweek and increasing earnings, average weekly earnings also increased by 3.3 percent over the year.

In 2018, average weekly hours for production and supervisory employees trended similarly to those for all employees, staying within the range of 33.6–33.8 hours. The series began the year at a level of 33.6 hours and, over the next 11 months, ranged from 33.7 to 33.8 hours. Average hourly earnings for production and nonsupervisory employees on total private payrolls increased by \$0.78 over the year, to \$23.09, a gain of 3.5 percent.

Prices, as measured by the Consumer Price Index for all Urban Consumers (CPI-U), rose 1.9 percent over the year, resulting in 1.4-percent growth in real average weekly earnings. The growth in real average weekly earnings accelerated in the last quarter of 2018, averaging 1.1 percent over the year, compared with 0.7 percent in the preceding 9 months. This is due mainly to steady increases in average hourly earnings and some weakness in prices measured by the CPI-U. (See figure 4.)



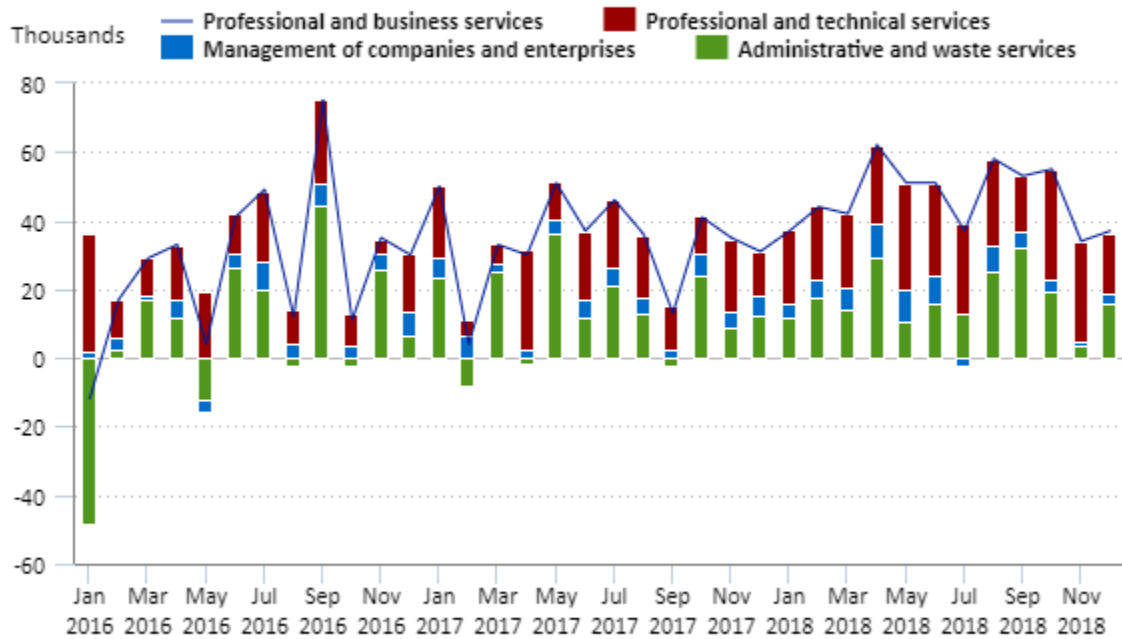
Improving employment growth

This section discusses industries whose employment growth improved in 2018.

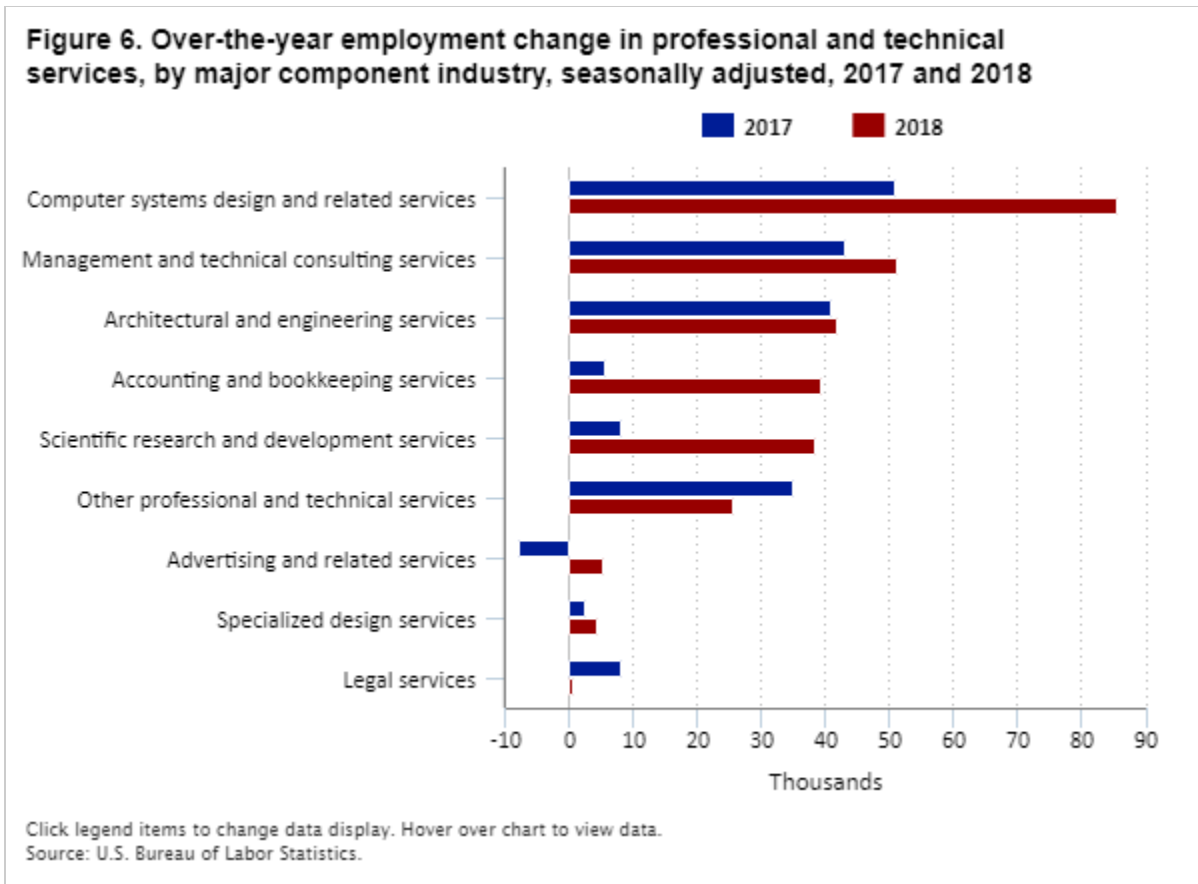
Professional and business services

Professional and business services added 561,000 jobs in 2018, the most of any industry sector. This employment growth accounted for 21 percent of total nonfarm employment growth over the year, or about 1 out of every 5 jobs. The acceleration in employment growth (relative to 2017) was concentrated in professional and technical services, specifically computer systems design and related services (+86,000), accounting and bookkeeping services (+39,000), and scientific research and development services (+38,000). Each of these industries added more jobs in 2018 than in 2017. (See figures 5 and 6.) The other major component industries in the sector—management of companies and enterprises and administrative and waste services—experienced employment growth similar to that in 2017.

Figure 5. Over-the-month employment change in professional and business services, by major component industry, seasonally adjusted, January 2016–December 2018

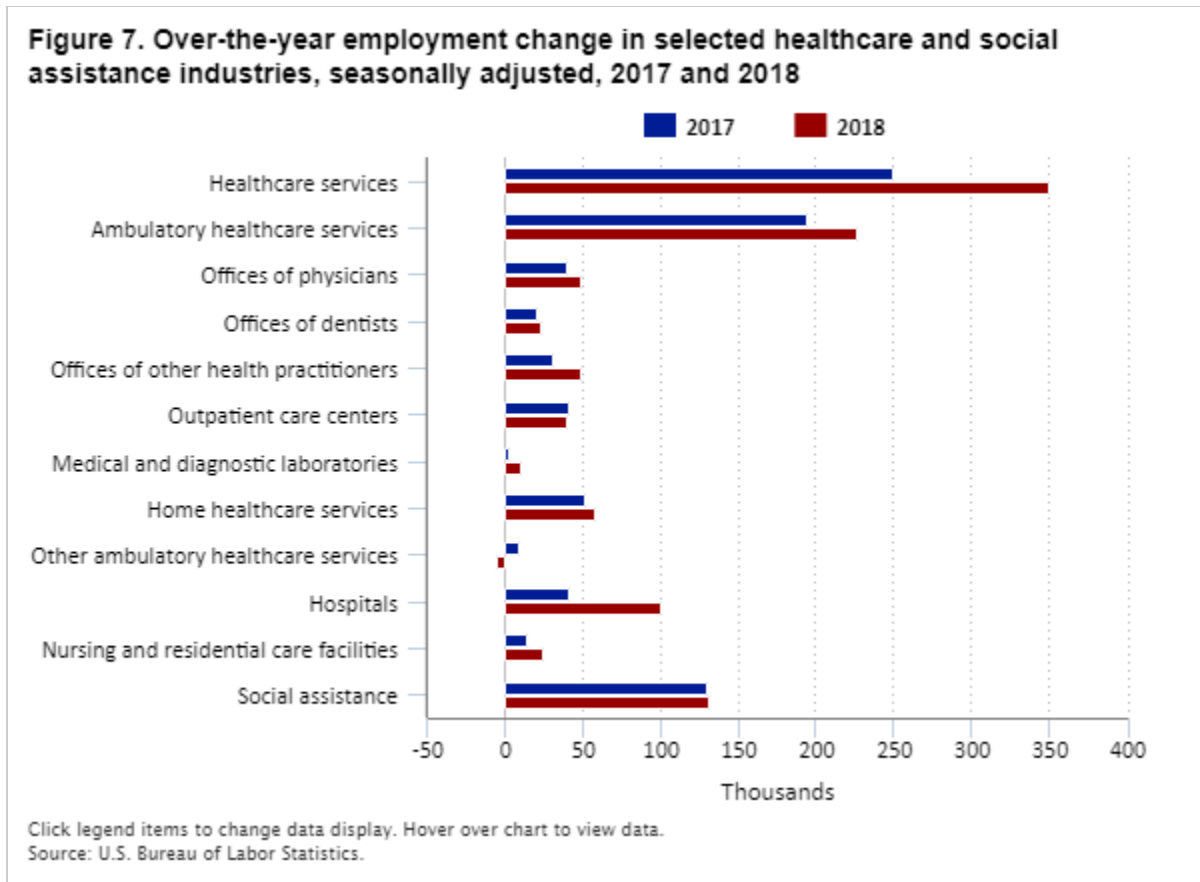


Click legend items to change data display. Hover over chart to view data.
 Source: U.S. Bureau of Labor Statistics.



Private education and healthcare services

Both education and healthcare services added jobs in 2018. However, education services expanded at a slightly slower rate, adding 50,000 jobs in 2018, compared with 73,000 jobs in 2017. Conversely, healthcare services accelerated quite markedly, adding 350,000 jobs in 2018, compared with 250,000 jobs in the previous year. (See figure 7.)



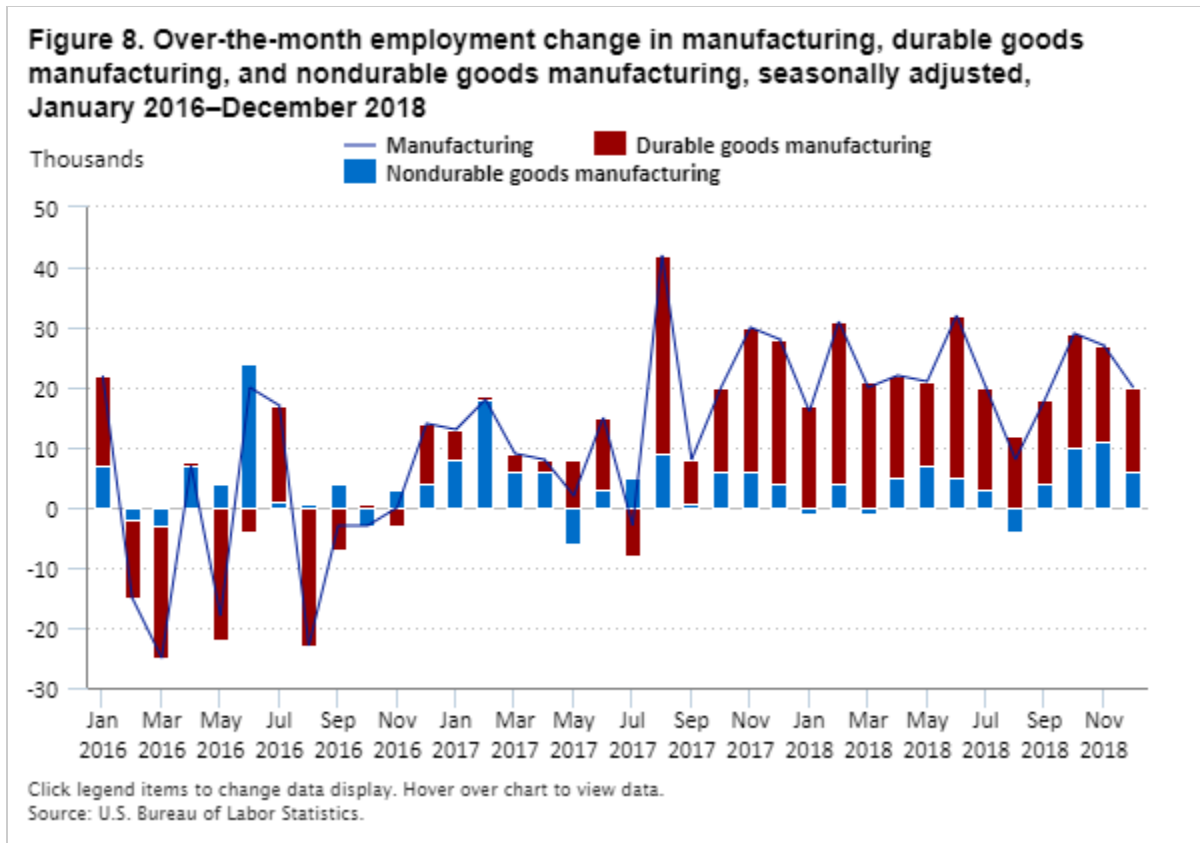
Within healthcare, hospitals (+100,000), home healthcare services (+59,000), offices of physicians (+50,000), and offices of other health practitioners (+49,000) drove employment gains. The remaining component industries showed little net change over the year.

Employment growth in social assistance remained steady, with the industry adding 131,000 jobs in 2018, compared with 130,000 jobs in 2017. Within social assistance, individual family services added 111,000 jobs in 2018. This growth was concentrated in services for the elderly and persons with disabilities, which added 3 out of every 4 jobs in this industry.

Manufacturing

After adding 190,000 jobs in 2017, manufacturing saw its employment growth accelerate in 2018, adding another 264,000 jobs over the year. Employment growth continued to be concentrated in durable goods manufacturing. In 2018, 81 percent of all manufacturing jobs were added in the durable goods component, compared with 66 percent in 2017. The component industries that drove gains in 2017 continued to show strength in 2018. These industries include transportation equipment (+65,000), machinery (+42,000), and fabricated metal products (+40,000).

The number of jobs added in nondurable goods manufacturing in 2018 (+49,000) was similar to that added in 2017 (+65,000). Within nondurable goods in 2018, food manufacturing accounted for about 43 percent of the employment gains (+21,000) and chemicals accounted for 32 percent (+16,000). (See figure 8.)



Employment growth in manufacturing continued in 2018 despite rising trade tensions between the United States and many of its largest trading partners. Trade restrictions and negotiations disproportionately affect manufacturing industries because tariffs are levied on physical goods, not on services.⁸ Adding to the whirlwind of trade tensions, the United States–Mexico–Canada Agreement (the new trade agreement designed to replace the 1994 North American Free Trade Agreement) was signed on November 30, 2018, and is waiting for ratification by the three countries.⁹ The agreement’s new regulations may have far-reaching impacts on the transportation equipment industry and the supply chains that support it.¹⁰

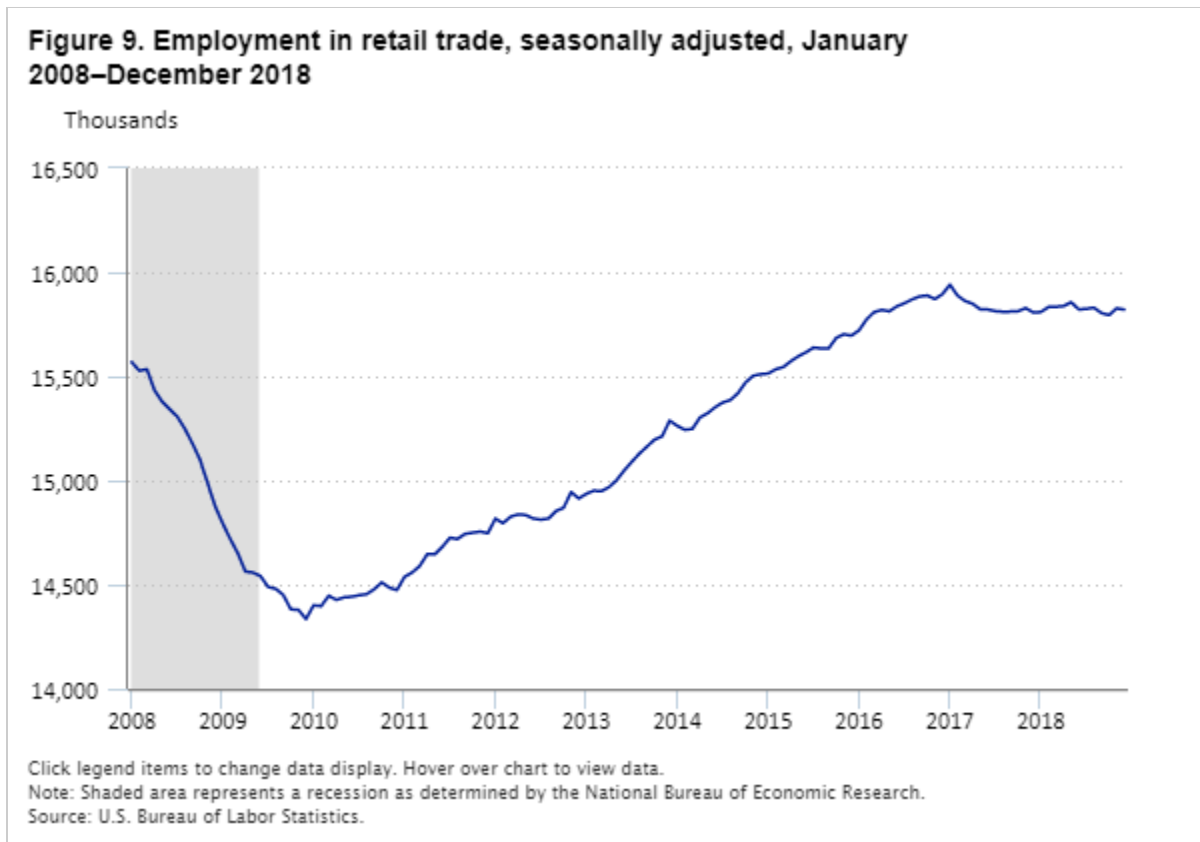
Transportation and warehousing

Employment in transportation and warehousing also accelerated in 2018, adding 216,000 jobs over the year, compared with 186,000 jobs in 2017. This acceleration was driven by couriers and messengers (+54,000) and by warehousing and storage (+84,000). Almost 2 out of every 3 jobs created within transportation and warehousing in 2018 can be attributed to these two industries. The rise of e-commerce has increased the demand for package handling and delivery services (couriers and messengers) and for storing goods and fulfilling online orders (warehousing and storage).

Retail trade

A fundamental shift in the retail trade environment continues as brick-and-mortar retail stores struggle and e-commerce takes over a growing percentage of total retail sales. The U.S. Census Bureau, in its latest e-commerce data release for the fourth quarter of 2018, reported that e-commerce sales totaled \$132.8 billion, an increase of 12.1 percent from the third quarter of 2017.¹¹ More importantly, e-commerce sales are now responsible for 9.9

percent of all retail sales. In light of these changing business dynamics, it is unsurprising that retail trade employment experienced erratic over-the-month changes throughout 2018. However, it still managed to remain basically unchanged—a marked improvement over the loss of 88,000 jobs in 2017. (See figure 9.)



Motor vehicle and parts dealers led the employment gains in retail trade in 2018, adding 24,000 jobs over the year. This job growth partly offset weakness in sporting goods, hobby, book, and music stores (–62,000); electronics and appliance stores (–17,000); and building material and garden supply stores (+4,000). Employment in food and beverage stores changed little over the year. Employment in general merchandise stores was also flat in 2018 (+9,000), following large losses in 2017 (–74,000).

Steady employment growth

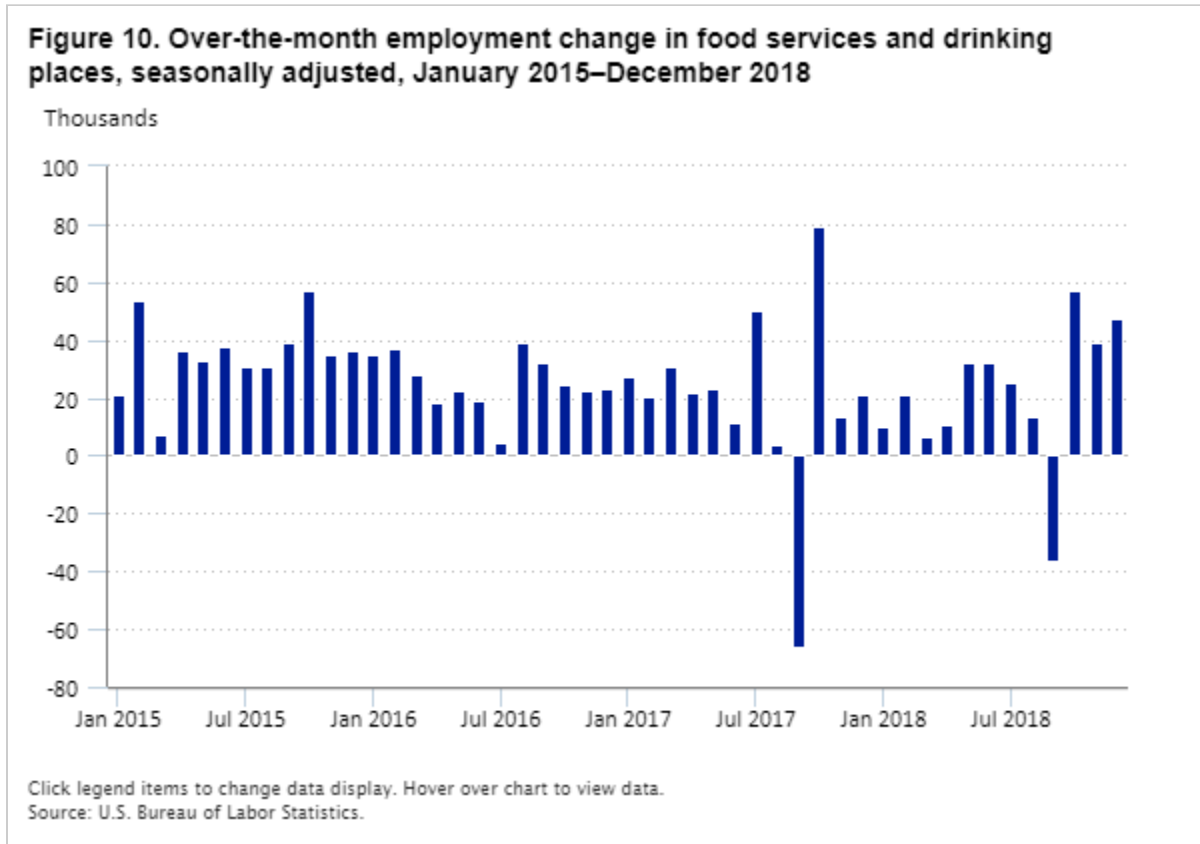
This section discusses industries whose employment growth in 2018 was about the same as that in 2017.

Leisure and hospitality

Leisure and hospitality added 359,000 jobs in 2018, close to the growth experienced in 2017, when the industry added 351,000 jobs. Employment growth within the industry was widespread, and component industries experienced over-the-year job gains similar to those in 2017.

In December 2018, there were just over 16.5 million jobs in the leisure and hospitality industry, and of these, about 73 percent were in food services and drinking places. Because workers in food services and drinking places are typically paid by the hour and on a weekly basis, employment in this industry can be affected by natural disasters. In fact, some of the employment weakness in September 2018 may have reflected the impact of Hurricane

Florence, just as employment changes in August and September 2017 were likely affected by Hurricanes Harvey and Irma.¹² (See figure 10.)



Construction

In 2018, employment in construction expanded by 307,000, fairly consistent with the 268,000 jobs added in 2017. (See table 2.) Within construction, three component industries—nonresidential specialty trade contractors, residential building, and heavy and civil engineering construction—experienced a slight acceleration in employment growth, while nonresidential building and residential specialty trade contractors grew at the same pace as in 2017.

Table 2. Comparison of employment growth in construction industries, 2017 and 2018 (in thousands)

Industry	12-month change		Difference
	2017	2018	
Construction	268	307	39
Residential building	31	51	20
Nonresidential building	34	21	-14
Heavy and civil engineering construction	51	67	16
Residential specialty trade contractors	69	65	-4
Nonresidential specialty trade contractors	83	104	21

Note: Employment estimates are rounded to the nearest thousand.
See footnotes at end of table.

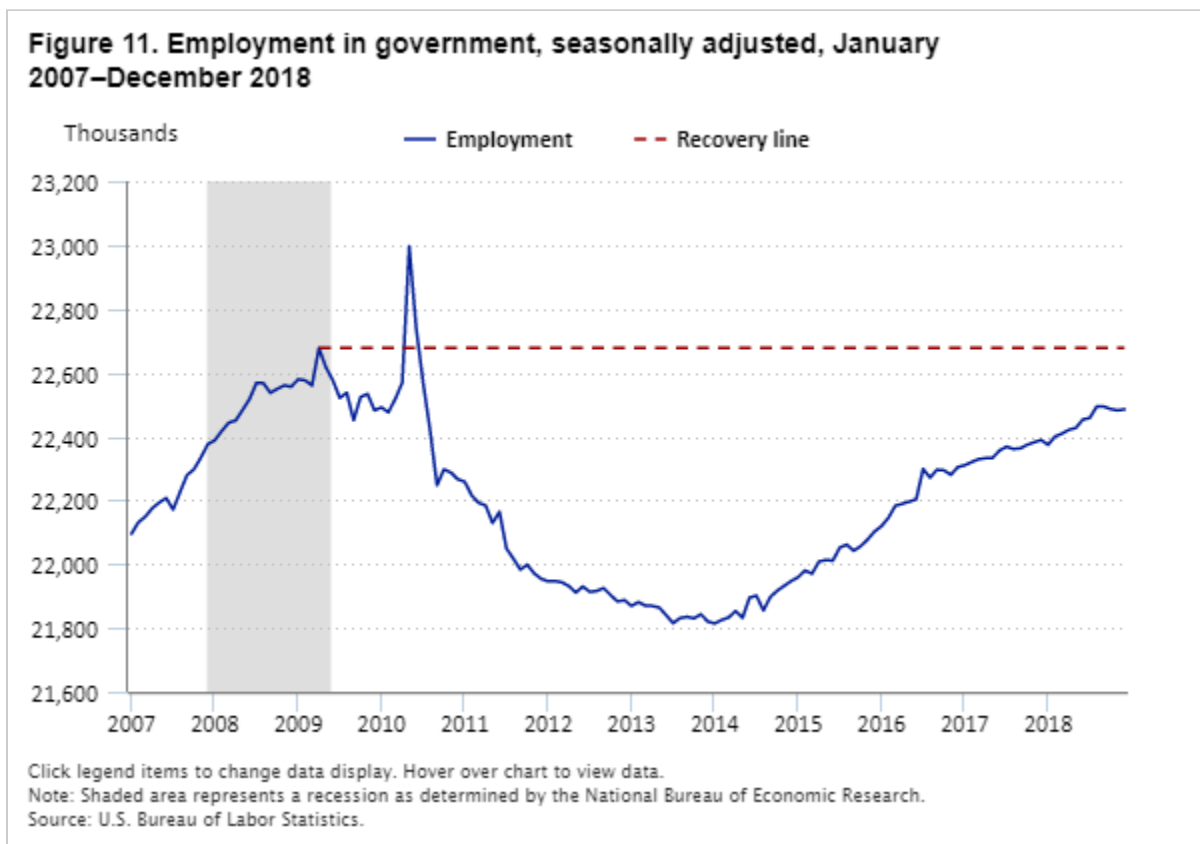
Source: U.S. Bureau of Labor Statistics.

The year 2018 saw extraordinary events that required recovery and rebuilding efforts. Hurricane Florence made landfall on September 14 near Wrightsville Beach, North Carolina.¹³ In response to the wide-scale flooding caused by the storm, the Federal Emergency Management Agency (FEMA) issued disaster declarations for 28 counties in North Carolina and 6 counties in South Carolina.¹⁴ Almost a month later, Hurricane Michael made landfall near Mexico Beach, Florida. It was the strongest hurricane to strike the contiguous United States in 26 years,¹⁵ causing FEMA to issue disaster declarations for 12 counties in Florida and 17 counties in Georgia.¹⁶ Following these two hurricanes, in November 2018, California experienced the worst wildfire season in its history, with a total of 7,571 fires burning an area of 1,671,203 acres—the largest amount of burned acreage recorded.¹⁷

Despite these events, the CES survey cannot directly attribute any changes in construction employment to rebuilding or recovery efforts.

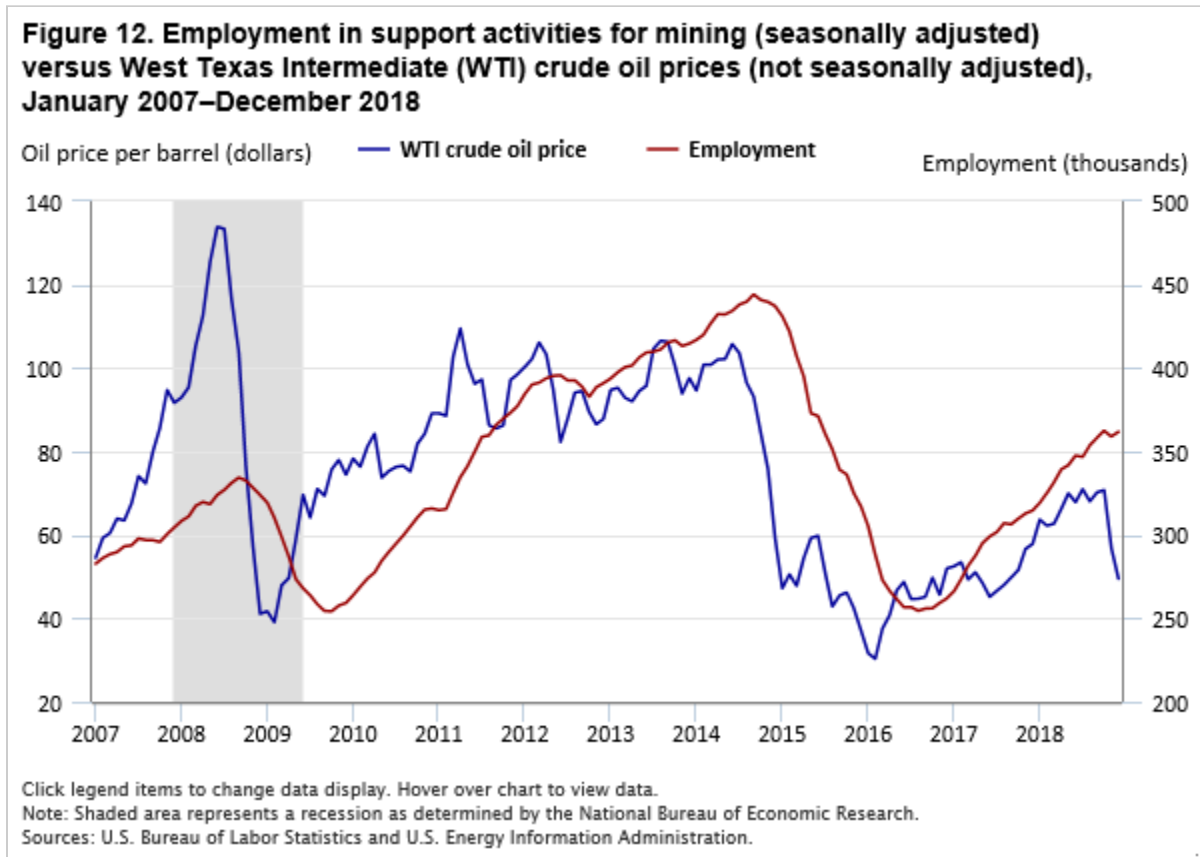
Government

Employment growth in the public sector remained steady in 2018, with the sector adding almost the same number of jobs as it did in 2017. Small employment gains at the federal level were offset by slight weakness in both state and local government employment. Although total government employment grew slightly faster in 2018, it still remained 192,000 jobs short of fully recovering from its most recent downturn. (See figure 11.)



Mining and logging

Within mining and logging, the mining industry continued to add jobs in 2018, at a pace similar to that in 2017. This industry is driven primarily by support activities for mining and is very sensitive to changes in the price of oil.¹⁸ (See figure 12.) Since many establishments in the industry operate on very small margins, oil price fluctuations can determine whether the industry adds or loses jobs. This sensitivity results in the price of oil leading employment changes in mining.



The price of oil declined sharply from a high of \$76.40 in October 2018 to \$44.48 in December 2018, a decrease of roughly 29 percent, but, to date, employment in mining has not peaked.

Information

Employment in the information sector remained essentially unchanged in 2018 (+6,000). Within the sector, telecommunications continued to lose jobs, shedding 34,000 jobs in 2018 after losing 31,000 jobs in 2017. Employment in other information services—a category that includes industries such as news syndicates, libraries and archives, internet publishing and broadcasting, and web search portals—increased by 24,000 in 2018, the same as in 2017. The remaining component industries of the information sector experienced negligible employment changes.

Slowing employment growth

This section discusses industries whose employment growth decelerated in 2018.

Financial activities

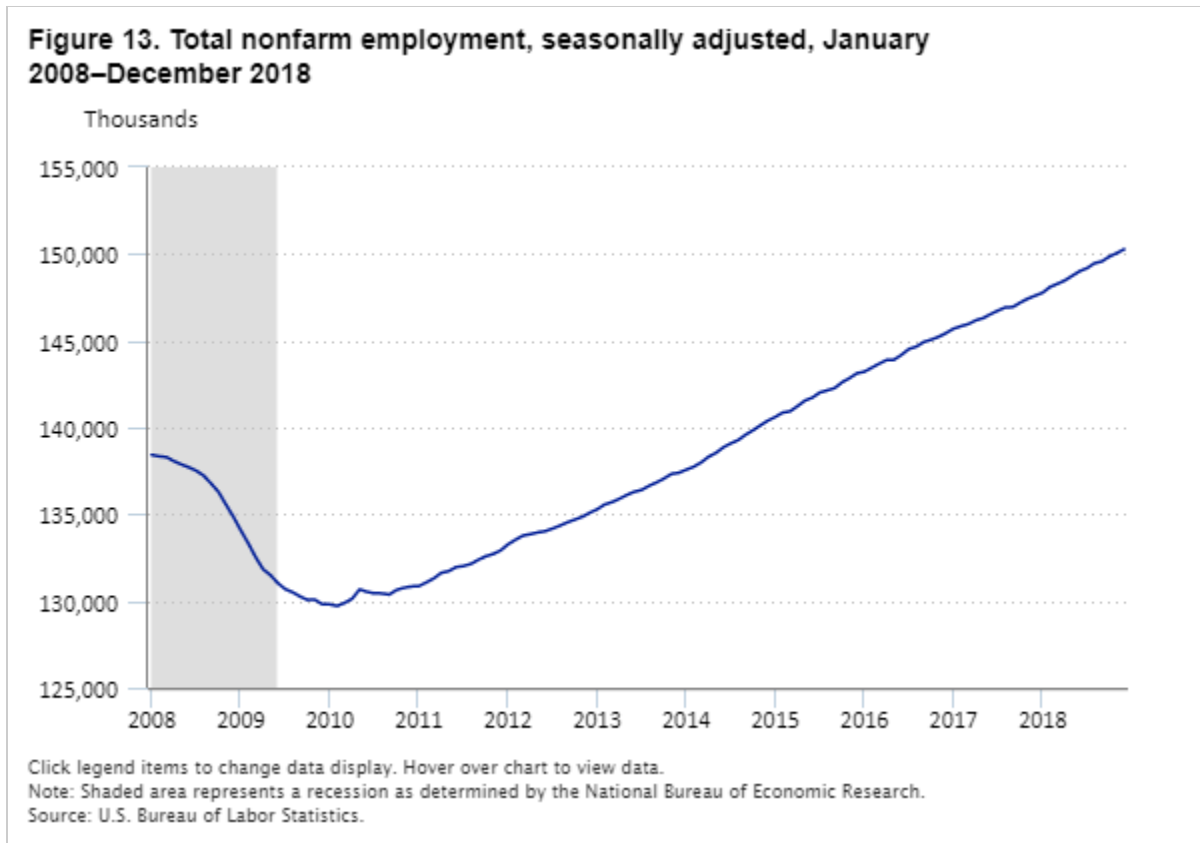
The financial activities industry added 115,000 jobs in 2018, slightly down from the 130,000 jobs added in 2017. Within the industry, finance and insurance added 49,000 jobs, less than in the previous year (+68,000). This employment slowdown is partly explained by a widespread weakness within credit intermediation and related activities and a slight deceleration within insurance carriers and related activities. However, job growth in securities, commodity contracts, investments, and funds and trusts (+23,000) was almost twice that recorded in 2017. Real estate and rental and leasing services added 67,000 jobs, in line with growth in 2017.

Other services

Employment in other services increased by 75,000 in 2018, after rising by 91,000 in 2017. Among the component industries, only personal and laundry services added jobs over the year (+31,000), accounting for almost half of all job gains within the industry. Employment in repair and maintenance and in membership associations and organizations changed little in 2018.

Summary—another chapter in a long expansion

Total nonfarm employment continued to expand in 2018, advancing faster than it did in 2017 or 2016. (See figure 13.) Over the year, many major industries added more jobs than they did in 2017. The employment strength in goods-producing industries in 2017 largely continued in 2018. Employment in service-providing industries accelerated slightly, leading to the larger over-the-year change in total nonfarm employment. Professional and business services, private education and health services, leisure and hospitality, manufacturing, and construction led the employment gains.



The year 2018 also showcased the resiliency of the U.S. job market. Despite some headwinds from uncertain trade environment, natural disasters, and a historically tight labor market, payrolls continued to march onward.

SUGGESTED CITATION

Tyler Downing, "Employment growth accelerates in 2018, extending a lengthy expansion," *Monthly Labor Review*, U.S. Bureau of Labor Statistics, May 2019, <https://doi.org/10.21916/mlr.2019.10>.

NOTES

¹ The CES program, which provides detailed industry data on employment, hours, and earnings of workers on nonfarm payrolls, is a monthly survey of about 142,000 businesses and government agencies representing approximately 689,000 individual worksites. For more information on the program's concepts and methodology, see "Technical notes for the Current Employment Statistics survey," *Current Employment Statistics—CES (national)* (U.S. Bureau of Labor Statistics), <https://www.bls.gov/web/empsit/cestn.htm>. To access CES data, see <https://www.bls.gov/ces/>. The CES data are seasonally adjusted unless otherwise noted. Over-the-year changes are calculated from December of the previous year through December of the reference year.

² Diffusion indexes measure the percentage of industries with increasing employment plus one-half of the industries with unchanged employment. A diffusion index of 50 indicates an equal balance between industries with increasing and decreasing employment. For more information on how the index is calculated, see Patricia M. Getz and Mark G. Ulmer, "Diffusion indexes: a barometer of the economy," *Monthly Labor Review*, April 1990, <https://www.bls.gov/opub/mlr/1990/04/art3full.pdf>.

³ "Destructive 2018 Atlantic hurricane season draws to an end" (National Oceanic and Atmospheric Administration, November 28, 2018), <https://www.noaa.gov/media-release/destructive-2018-atlantic-hurricane-season-draws-to-end>.

⁴ For more information, see "Incident information" (California Department of Forestry and Fire Protection), <https://www.fire.ca.gov/>.

⁵ See “Beige Book—July 18, 2018” (Board of Governors of the Federal Reserve System), <https://www.federalreserve.gov/monetarypolicy/beigebook201807.htm>. According to this source, “all districts reported that labor markets were tight and many said that the inability to find workers constrained growth.”

⁶ The World Trade Organization’s World Trade Outlook Indicator dropped from 102.3 in the first quarter of 2018 to 98.6 in the fourth quarter of 2018, a decline of 3.6 points. For more information, see “Methodology of World Trade Outlook Indicator (WTOI)” (World Trade Organization), https://www.wto.org/english/news_e/news19_e/wtoi_methodology_18_02_19.pdf. For archived releases, see https://www.wto.org/english/news_e/archive_e/wtoi_arc_e.htm.

⁷ Recessions are identified by the National Bureau of Economic Research (NBER). According to the NBER, the most recent recession began in December 2007 and ended in June 2009. The previous two recessions were from March 2001 to November 2001 and from July 1990 to March 1991. For a complete list of business cycle expansions and contractions” (Cambridge, MA: National Bureau of Economic Research), <http://www.nber.org/cycles/cyclesmain.html>.

⁸ Alanna Petroff and Julia Horowitz, “What is a tariff? Your trade questions, answered,” *CNN Money*, June 8, 2018, <https://money.cnn.com/2018/06/08/news/economy/tariff-questions-answered/index.html>.

⁹ The full text of the agreement is available at <https://ustr.gov/trade-agreements/free-trade-agreements/united-states-mexico-canada-agreement>.

¹⁰ According to reporting by National Public Radio’s Scott Horsley, “the biggest change this deal makes, really, is to the automotive sector, where it does put higher requirements on North American content, and in particular high-wage content, for vehicles to trade duty-free.” See Horsley, “Trump, at G-20 summit, signs trade deal with Canada, Mexico,” *NPR*, November 30, 2018, <https://www.npr.org/2018/11/30/672161749/trump-at-g-20-summit-signs-trade-deal-with-canada-mexico>.

¹¹ For further information, see <https://www.census.gov/retail/index.html#ecommerce>.

¹² *The Employment Situation—September 2018*, U.S. Department of Labor, October 5, 2018, https://www.bls.gov/news.release/archives/empsit_10052018.pdf.

¹³ According to the National Weather Service, “Hurricane Florence, a large and slow moving category one hurricane, made landfall during the morning of September 14, 2018. After the eye crossed Wrightsville Beach, NC at 7:15 a.m. the storm spent the next two days producing record-breaking rainfall across eastern North Carolina and a portion of northeastern South Carolina.” See “Hurricane Florence: September 14, 2018” (National Oceanic and Atmospheric Administration, September 14, 2018), <https://www.weather.gov/ilm/HurricaneFlorence>.

¹⁴ See “North Carolina Hurricane Florence (DR-4393)” (Federal Emergency Management Agency), <https://www.fema.gov/disaster/4393>; and “South Carolina Hurricane Florence (DR-4394)” (Federal Emergency Management Agency), <https://www.fema.gov/disaster/4394>.

¹⁵ According to the National Weather Service, “Hurricane Michael made landfall as an unprecedented Category 5 Hurricane in the Florida Panhandle region with maximum sustained wind speeds of 140 knots (161 mph) and a minimum pressure 919 mb.” See “Catastrophic Hurricane Michael strikes Florida Panhandle October 10, 2018” (National Oceanic and Atmospheric Administration), <https://www.weather.gov/tae/HurricaneMichael2018>.

¹⁶ See “Florida Hurricane Michael (DR-4399)” (Federal Emergency Management Agency), <https://www.fema.gov/disaster/4399>; and “Georgia Hurricane Michael (DR-4400)” (Federal Emergency Management Agency), <https://www.fema.gov/disaster/4400>.

¹⁷ “Incident information” (California Department of Forestry and Fire Protection), http://cdfdata.fire.ca.gov/incidents/incidents_stats?year=2018.

¹⁸ According to the North American Industry Classification System, support activities for mining includes “establishments primarily providing support services, on a contract or fee basis, required for the mining and quarrying of minerals and for the extraction of oil and gas. Establishments performing exploration (except geophysical surveying and mapping) for minerals, on a contract or fee basis,

are included in this subsector.” See <https://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=213&search=2017%20NAICS%20Search>.

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Tight labor market continues in 2018 as the unemployment rate falls to a 49-year low

The U.S. labor market continued to strengthen in 2018. The unemployment rate fell to a 49-year low in 2018, and employment continued to expand. The employment–population ratio increased over the year, while the civilian labor force participation rate changed little.

The Nation’s current economic expansion entered its ninth year in 2018. By the end of the year, the economy had grown for 114 months since the end of the Great Recession in June 2009—the second longest economic expansion on record.[1] Reflecting this sustained period of economic growth, the U.S. labor market showed continued strength during the year. Steady job growth continued, and the unemployment rate (the number of unemployed people as a percentage of the labor force) fell to a 49-year low. An indepth look into data from the Current Population Survey (CPS) revealed an array of labor market indicators pointed to continued labor market improvement during the year.[2] The employment–population ratio (the number of employed people as a percentage of the civilian noninstitutional population age 16 and older) continued to rise, and the number of long-term unemployed continued to decrease.[3] The survey data also showed that workers in most demographic groups experienced rising employment and declining unemployment in 2018.[4]

This article describes several important developments or issues related to the U.S. labor market in 2018. It examines the employment situation of people by sex, race, Hispanic or Latino ethnicity, age, educational attainment, veteran status, disability status, and nativity. In addition, the article summarizes changes in other CPS measures used to gauge the health of the labor market in 2018—such as involuntary part-time work, alternative measures of labor underutilization, unemployment by reason and duration, employment and unemployment by occupation, and median usual weekly earnings.



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Employment situation

The unemployment rate declined to a 49-year low in 2018. In the fourth quarter of 2018, the jobless rate was 3.8 percent—the same rate recorded in the third quarter of 2018. This unemployment rate was the lowest since the fourth quarter of 1969.^[5] The number of unemployed people was down by 472,000 over the year to 6.1 million in the fourth quarter. (See table 1 and figure 1.)

Table 1. Employment status of the civilian noninstitutional population 16 years and older, by sex, race, and Hispanic or Latino ethnicity, quarterly averages, seasonally adjusted, 2017–18 (levels in thousands)

Characteristic	Fourth quarter, 2017	2018				Change, fourth quarter, 2017–18
		First quarter	Second quarter	Third quarter	Fourth quarter	
Total, 16 years and older						
Civilian labor force	160,566	161,557	161,782	162,022	162,918	2,352
Participation rate	62.7	62.9	62.8	62.8	63.0	0.3
Employed	153,952	154,952	155,449	155,879	156,777	2,825
Employment–population ratio	60.2	60.3	60.4	60.4	60.6	0.4
Unemployed	6,614	6,605	6,333	6,143	6,142	–472
Unemployment rate	4.1	4.1	3.9	3.8	3.8	–0.3
Men, 16 years and older						
Civilian labor force	85,339	86,077	86,100	85,895	86,306	967
Participation rate	69.0	69.3	69.2	68.8	69.0	0.0
Employed	81,760	82,510	82,620	82,638	83,043	1,283
Employment–population ratio	66.1	66.4	66.4	66.2	66.4	0.3
Unemployed	3,579	3,567	3,480	3,257	3,263	–316
Unemployment rate	4.2	4.1	4.0	3.8	3.8	–0.4
Women, 16 years and older						
Civilian labor force	75,227	75,480	75,682	76,127	76,613	1,386
Participation rate	56.9	56.9	56.9	57.1	57.4	0.5
Employed	72,192	72,442	72,829	73,241	73,734	1,542
Employment–population ratio	54.6	54.6	54.8	55.0	55.2	0.6
Unemployed	3,034	3,038	2,853	2,886	2,879	–155
Unemployment rate	4.0	4.0	3.8	3.8	3.8	–0.2
White						
Civilian labor force	125,067	125,607	125,710	125,560	126,371	1,304
Participation rate	62.7	62.9	62.8	62.7	63.0	0.3
Employed	120,511	121,107	121,294	121,363	122,092	1,581
Employment–population ratio	60.4	60.6	60.6	60.6	60.8	0.4
Unemployed	4,556	4,501	4,416	4,197	4,279	–277
Unemployment rate	3.6	3.6	3.5	3.3	3.4	–0.2
Black or African American						
Civilian labor force	20,162	20,407	20,300	20,461	20,492	330
Participation rate	62.2	62.6	62.1	62.4	62.2	0.0
Employed	18,727	18,959	19,021	19,175	19,210	483

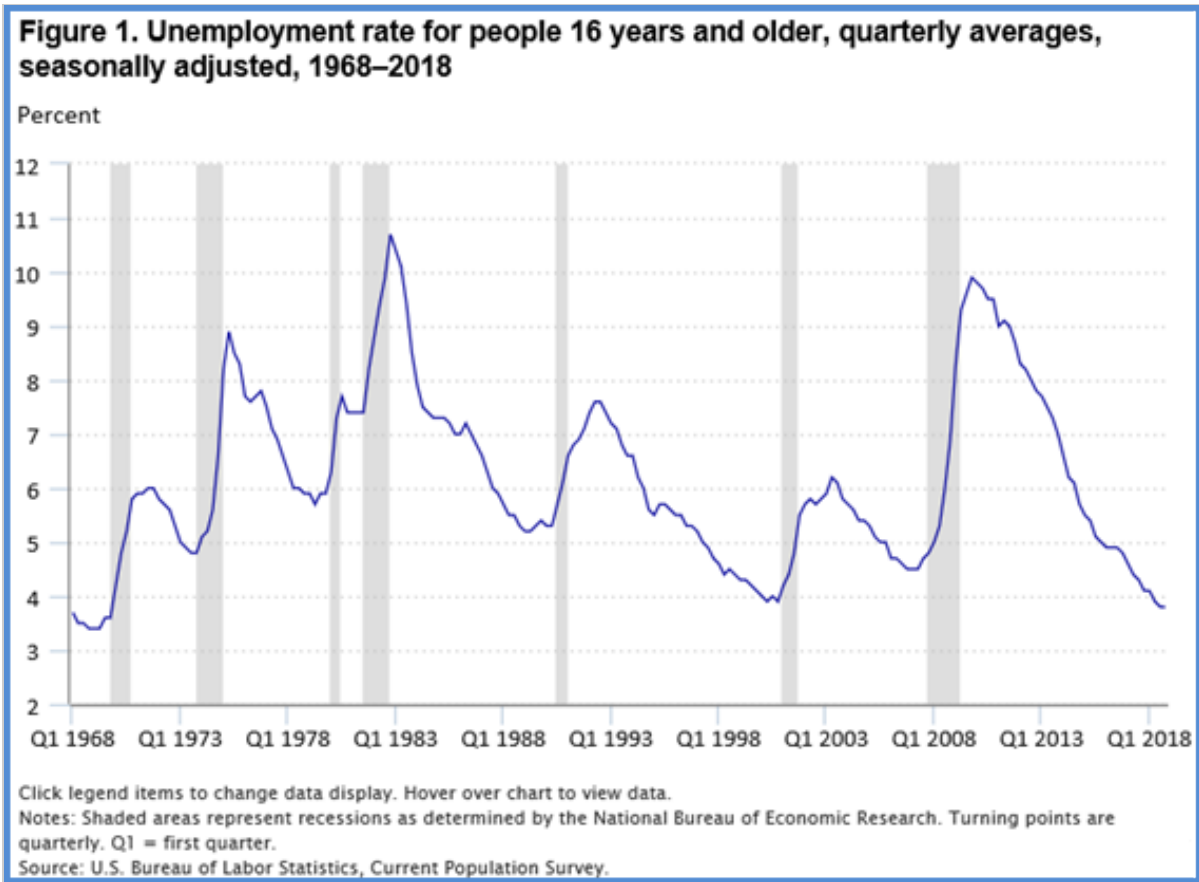
See footnotes at end of table.

Table 1. Employment status of the civilian noninstitutional population 16 years and older, by sex, race, and Hispanic or Latino ethnicity, quarterly averages, seasonally adjusted, 2017–18 (levels in thousands)

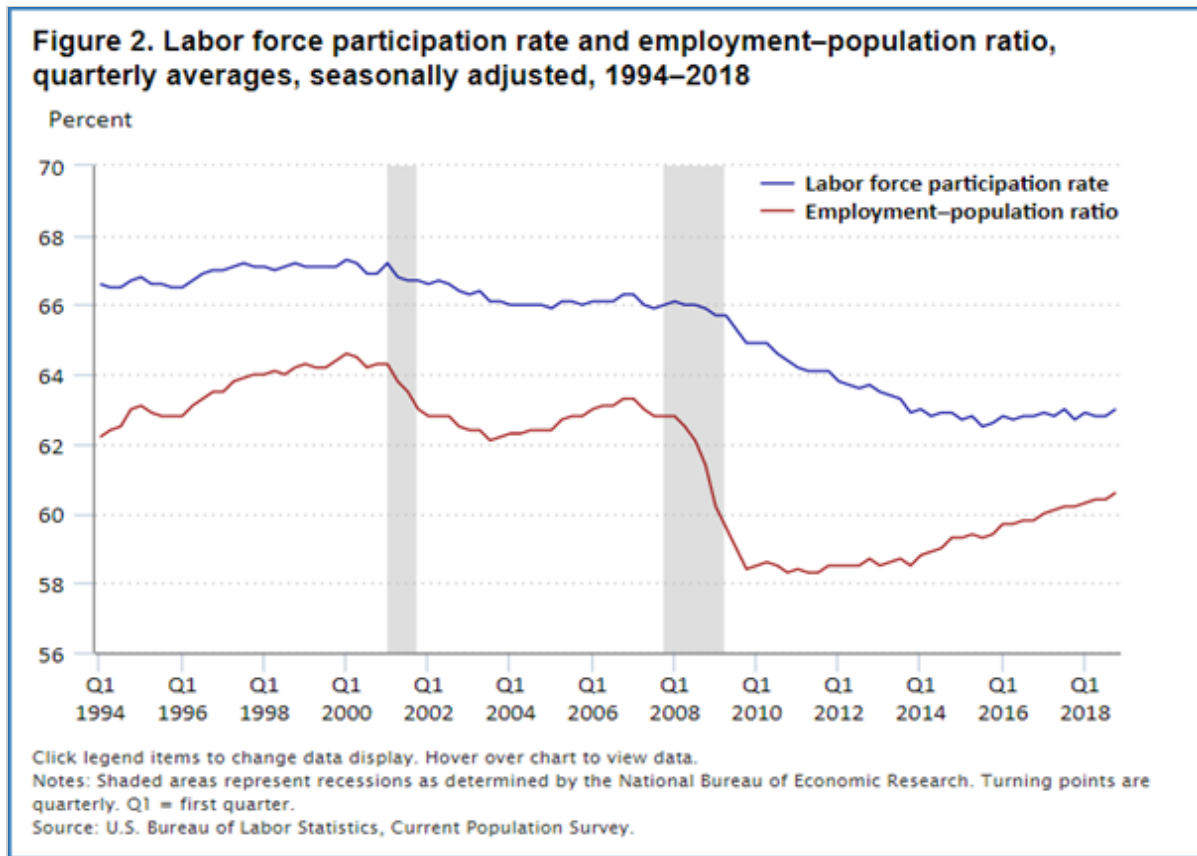
Characteristic	Fourth quarter, 2017	2018				Change, fourth quarter, 2017–18
		First quarter	Second quarter	Third quarter	Fourth quarter	
Employment–population ratio	57.8	58.1	58.2	58.4	58.3	0.5
Unemployed	1,434	1,447	1,278	1,287	1,282	–152
Unemployment rate	7.1	7.1	6.3	6.3	6.3	–0.8
Asian						
Civilian labor force	9,778	9,970	10,042	10,240	10,292	514
Participation rate	63.2	63.0	63.1	64.0	64.0	0.8
Employed	9,501	9,668	9,770	9,912	9,978	477
Employment–population ratio	61.4	61.1	61.4	61.9	62.0	0.6
Unemployed	277	302	272	328	314	37
Unemployment rate	2.8	3.0	2.7	3.2	3.0	0.2
Hispanic or Latino ethnicity						
Civilian labor force	27,426	27,931	28,265	28,381	28,765	1,339
Participation rate	65.7	66.0	66.4	66.2	66.7	1.0
Employed	26,094	26,539	26,925	27,087	27,497	1,403
Employment–population ratio	62.5	62.7	63.2	63.2	63.7	1.2
Unemployed	1,333	1,392	1,340	1,294	1,268	–65
Unemployment rate	4.9	5.0	4.7	4.6	4.4	–0.5

Notes: Estimates for the race groups (White, Black or African American, and Asian) do not sum to totals because data are not presented for all races. People whose ethnicity is identified as Hispanic or Latino may be of any race. Updated population controls are introduced annually with the release of January data.

Source: U.S. Bureau of Labor Statistics, Current Population Survey.



Employment grew by about 2.8 million in 2018, reaching 156.8 million in the fourth quarter of 2018. Furthermore, the employment–population ratio increased in 2018, to 60.6 percent in the fourth quarter. The ratio has been on an upward trend since 2014. (See table 1 and figure 2.)



In the last quarter of 2018, the civilian labor force participation rate—the number of people in the labor force as a percentage of the civilian noninstitutional population age 16 and older—at 63.0 percent changed little from a year earlier. The participation rate has remained fairly flat for the past 5 years. (See table 1 and figure 2.)

Jobless rates declined for most demographic groups

For most demographic groups in 2018, the employment situation continued to improve. Many groups experienced unemployment rates that were low by historical standards, and some groups had jobless rates that were at all-time lows. In 2018, unemployment rates declined for men and women (age 16 and older). The rate for Blacks or African Americans was at an all-time low, as was the rate for people of Hispanic or Latino ethnicity. By educational attainment, jobless rates for high school graduates and people with some college or an associate degree declined in 2018. The jobless rate also declined for foreign-born individuals but changed little over the year for veterans and people with a disability.

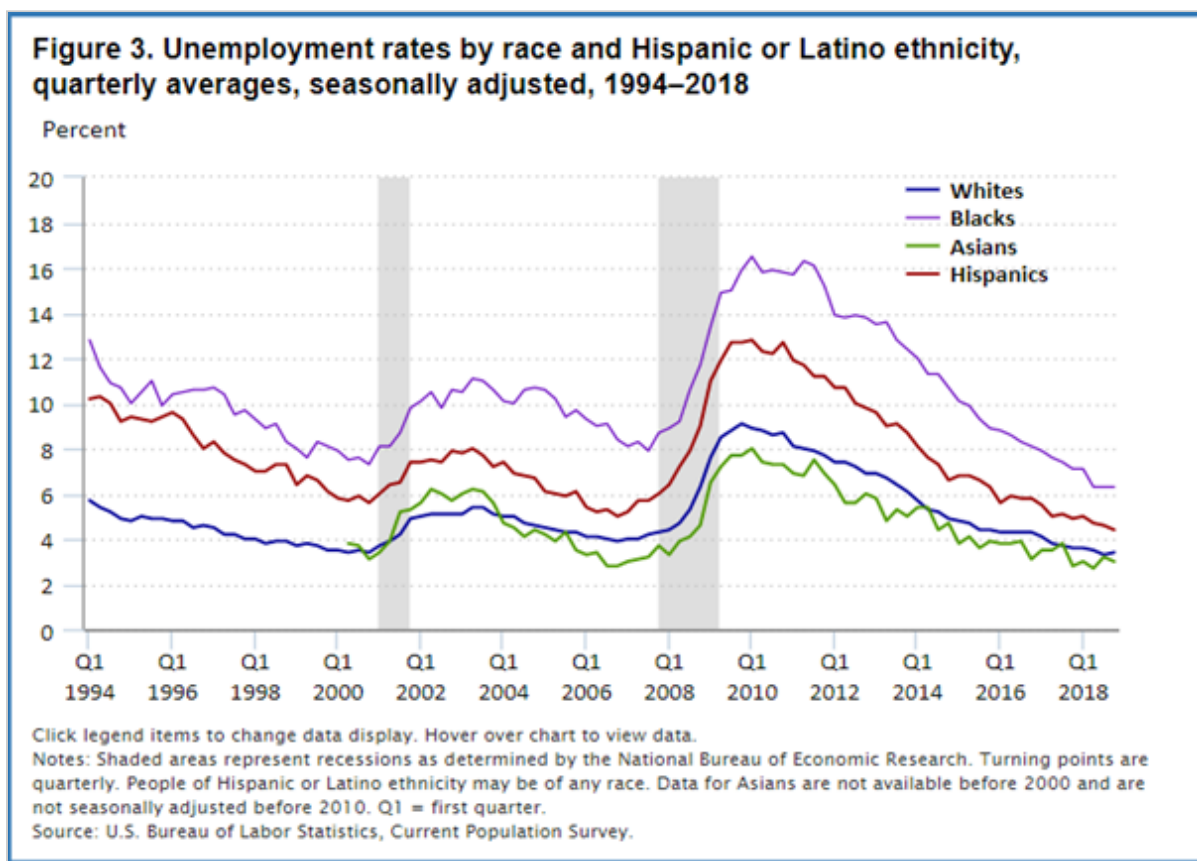
Labor market improved for both men and women

In 2018, both men and women (age 16 and older) experienced labor market improvements. The unemployment rate for men declined by 0.4 percentage point over the year to 3.8 percent in the fourth quarter of 2018. The jobless rate for women declined by 0.2 percentage point to 3.8 percent. The employment–population ratio for women (55.2 percent in the fourth quarter of 2018) increased over the year, while the ratio for men (66.4 percent in the fourth quarter of 2018) changed little. In the fourth quarter of 2018, the labor force participation rate for women rose from 56.9 percent to 57.4 percent, whereas the participation rate for men (69.0 percent) was unchanged over

the year. The participation rate for men has always been higher than the participation rate for women, although the gap between the two has narrowed over the past several decades. (See table 1.)

The employment situation by race and ethnicity: jobless rates for Blacks and Hispanics reached series lows

Whites experienced declining unemployment and expanding employment in 2018. The unemployment rate for Whites declined by 0.2 percentage point over the year. While the fourth-quarter rate for Whites was 3.4 percent, the third-quarter rate of 3.3 percent was the lowest quarterly rate since the fourth quarter of 1969. Strong employment gains for Whites were reflected in their employment–population ratio. The employment–population ratio for Whites rose by 0.4 percentage point to 60.8 percent in the fourth quarter of 2018. However, the labor force participation rate for this group (63.0 percent) changed little over the year. (See table 1 and figure 3.)



Likewise, unemployment continued to decline for Blacks, and their employment rose in 2018. After reaching 16.5 percent in the first quarter of 2010, the unemployment rate for Blacks declined to 6.3 percent in the fourth quarter of 2018, the same rate as that in the previous two quarters and the lowest rate on record (comparable data for this group begin in 1972). In addition, the rate for Blacks was down by 0.8 percentage point over the year. However, even with this improvement, the unemployment rate for Blacks remained considerably higher than the rates for Asians and Whites. Although employment for Blacks rose during the year, the growth just kept pace with their population growth. As a result, the employment–population ratio for Blacks (58.3 percent) changed little in 2018. However, the ratio had been trending up for this group in recent years. The labor force participation rate for Blacks (62.2 percent) was unchanged from the prior year.

The employment situation for Asians was little different in 2018 than it was in 2017. Their unemployment rate (3.0 percent in the fourth quarter of 2018) changed little over the year but had remained under 4 percent over the past three-and-a-half years.[6] The employment–population ratio for Asians, at 62.0 percent, changed little over the year, and the labor force participation rate, at 64.0 percent, also showed little change in 2018.

For people of Hispanic or Latino ethnicity, the employment situation continued to improve in 2018. The unemployment rate for Hispanics was 4.4 percent in the fourth quarter of 2018; this rate was a series low (data for this group begin in 1973).[7] The employment–population ratio for Hispanics rose to 63.7 percent in the fourth quarter of 2018. The ratio has been on an upward trend since 2011. The labor force participation rate for Hispanics rose over the year, to 66.7 percent in the last quarter of 2018. Hispanics had the highest participation rate among the major race and ethnicity groups. This higher participation rate may partly reflect Hispanics’ larger share of 25- to 54-year-olds, who are most likely to participate in the labor force.[8]

Unemployment declined and employment expanded for most age groups

Unemployment declined and employment expanded for most age groups in 2018. Among youth ages 16 to 24, the unemployment rate was 8.4 percent in the fourth quarter of 2018, a decrease of 0.8 percentage point from the prior year. This represents the lowest rate since the second quarter of 1969. Within this age group, teenagers (ages 16 to 19) continued to experience a higher unemployment rate, at 12.2 percent, nearly double the rate for young adults (ages 20 to 24), at 6.8 percent. (See table 2.)

Table 2. Employment status of the civilian noninstitutional population 16 years and older, by age and sex, quarterly averages, seasonally adjusted, 2017–18 (levels in thousands)

Characteristic	Fourth quarter, 2017	2018				Change, fourth quarter, 2017–18
		First quarter	Second quarter	Third quarter	Fourth quarter	
Total, 16 to 24 years						
Civilian labor force	20,953	21,270	20,990	20,802	20,891	–62
Participation rate	55.1	55.9	55.2	54.8	55.0	–0.1
Employed	19,032	19,378	19,175	19,033	19,144	112
Employment–population ratio	50.0	50.9	50.4	50.1	50.4	0.4
Unemployed	1,921	1,891	1,815	1,769	1,747	–174
Unemployment rate	9.2	8.9	8.6	8.5	8.4	–0.8
Total, 16 to 19 years						
Civilian labor force	5,818	5,978	5,840	5,781	5,960	142
Participation rate	34.7	35.6	34.8	34.5	35.6	0.9
Employed	4,980	5,148	5,095	5,042	5,235	255
Employment–population ratio	29.7	30.7	30.4	30.1	31.2	1.5
Unemployed	838	830	745	739	725	–113
Unemployment rate	14.4	13.9	12.8	12.8	12.2	–2.2
Total, 20 to 24 years						
Civilian labor force	15,135	15,292	15,150	15,021	14,931	–204
Participation rate	71.1	71.9	71.3	70.8	70.5	–0.6
Employed	14,052	14,230	14,080	13,991	13,908	–144

See footnotes at end of table.

Table 2. Employment status of the civilian noninstitutional population 16 years and older, by age and sex, quarterly averages, seasonally adjusted, 2017–18 (levels in thousands)

Characteristic	Fourth quarter, 2017	2018				Change, fourth quarter, 2017–18
		First quarter	Second quarter	Third quarter	Fourth quarter	
Employment–population ratio	66.0	66.9	66.2	65.9	65.6	–0.4
Unemployed	1,083	1,061	1,070	1,030	1,022	–61
Unemployment rate	7.2	6.9	7.1	6.9	6.8	–0.4
Total, 25 to 54 years						
Civilian labor force	102,901	103,525	103,501	103,617	104,147	1,246
Participation rate	81.8	82.0	81.9	82.0	82.3	0.5
Employed	99,390	99,941	100,095	100,360	100,856	1,466
Employment–population ratio	79.0	79.2	79.2	79.4	79.7	0.7
Unemployed	3,511	3,584	3,405	3,257	3,290	–221
Unemployment rate	3.4	3.5	3.3	3.1	3.2	–0.2
Men, 25 to 54 years						
Civilian labor force	54,968	55,446	55,441	55,304	55,556	588
Participation rate	88.7	89.1	89.1	88.7	89.0	0.3
Employed	53,166	53,598	53,647	53,618	53,832	666
Employment–population ratio	85.8	86.2	86.2	86.0	86.3	0.5
Unemployed	1,802	1,848	1,794	1,685	1,724	–78
Unemployment rate	3.3	3.3	3.2	3.0	3.1	–0.2
Women, 25 to 54 years						
Civilian labor force	47,933	48,078	48,060	48,313	48,591	658
Participation rate	75.0	75.1	75.0	75.4	75.8	0.8
Employed	46,225	46,342	46,448	46,742	47,025	800
Employment–population ratio	72.3	72.3	72.5	72.9	73.3	1.0
Unemployed	1,708	1,736	1,612	1,571	1,566	–142
Unemployment rate	3.6	3.6	3.4	3.3	3.2	–0.4
Total, 55 years and older						
Civilian labor force	36,700	36,825	37,264	37,582	37,862	1,162
Participation rate	39.9	39.8	40.0	40.1	40.2	0.3
Employed	35,540	35,673	36,162	36,463	36,779	1,239
Employment–population ratio	38.6	38.5	38.8	38.9	39.0	0.4
Unemployed	1,161	1,152	1,101	1,119	1,084	–77
Unemployment rate	3.2	3.1	3.0	3.0	2.9	–0.3
Men, 55 years and older						
Civilian labor force	19,612	19,693	19,916	20,057	20,169	557
Participation rate	46.1	45.9	46.2	46.2	46.2	0.1
Employed	18,960	19,042	19,290	19,463	19,596	636
Employment–population ratio	44.5	44.4	44.7	44.9	44.9	0.4
Unemployed	653	651	626	594	572	–81
Unemployment rate	3.3	3.3	3.1	3.0	2.8	–0.5

See footnotes at end of table.

Table 2. Employment status of the civilian noninstitutional population 16 years and older, by age and sex, quarterly averages, seasonally adjusted, 2017–18 (levels in thousands)

Characteristic	Fourth quarter, 2017	2018				Change, fourth quarter, 2017–18
		First quarter	Second quarter	Third quarter	Fourth quarter	
Women, 55 years and older						
Civilian labor force	17,086	17,121	17,364	17,522	17,692	606
Participation rate	34.6	34.4	34.7	34.9	35.0	0.4
Employed	16,580	16,631	16,872	17,000	17,182	602
Employment–population ratio	33.5	33.4	33.7	33.8	34.0	0.5
Unemployed	507	490	492	522	509	2.0
Unemployment rate	3.0	2.9	2.8	3.0	2.9	–0.1

Note: Updated population controls are introduced annually with the release of January data.

Source: U.S. Bureau of Labor Statistics, Current Population Survey.

The labor force participation rate for people ages 16 to 24 has remained fairly flat since 2010. In the fourth quarter of 2018, the participation rate for youth ages 16 to 24 was 55.0 percent. The employment–population ratio, however, has been trending up since 2010. The ratio in the last quarter of 2018 was 50.4 percent.

Among youth ages 16 to 24, young adults (ages 20 to 24) were about twice as likely to participate in the labor force as teenagers. The participation rate for young adults was 70.5 percent in the fourth quarter of 2018, little changed over the year. In the fourth quarter of 2018, the participation rate for teenagers was 35.6 percent, up by 0.9 percentage point from a year earlier.

By sex, teenagers and young adults have different trends in labor force participation. Teenage men and women had similar participation rates, at 34.3 percent and 36.9 percent, respectively, in the fourth quarter of 2018. Conversely, young adult men had a slighter higher rate than that of young adult women. In the fourth quarter of 2018, the participation rate for young adult men was 72.1 percent and the rate for young adult women was 68.9 percent. (See table 3.)

Table 3. Labor force participation rates of the civilian noninstitutional population, by sex and age, quarterly averages, seasonally adjusted, 2017–18

Sex and age	Fourth quarter, 2017	Fourth quarter, 2018	Change, 2017–18
Total			
Total, 16 years and older	62.7	63.0	0.3
16 to 24 years	55.1	55.0	–0.1
16 to 19 years	34.7	35.6	0.9
20 to 24 years	71.1	70.5	–0.6
25 to 54 years	81.8	82.3	0.5
25 to 34 years	82.1	82.8	0.7
35 to 44 years	82.7	82.9	0.2
45 to 54 years	80.5	81.1	0.6

See footnotes at end of table.

Table 3. Labor force participation rates of the civilian noninstitutional population, by sex and age, quarterly averages, seasonally adjusted, 2017–18

Sex and age	Fourth quarter, 2017	Fourth quarter, 2018	Change, 2017–18
55 years and older	39.9	40.2	0.3
55 to 64 years ⁽¹⁾	64.7	65.3	0.6
65 years and older ⁽¹⁾	19.2	19.8	0.6
Men			
16 years and older	69.0	69.0	0.0
16 to 24 years	56.1	55.3	-0.8
16 to 19 years	33.7	34.3	0.6
20 to 24 years	73.9	72.1	-1.8
25 to 54 years	88.7	89.0	0.3
25 to 34 years	88.8	89.1	0.3
35 to 44 years	90.7	90.8	0.1
45 to 54 years	86.8	87.1	0.3
55 years and older	46.1	46.2	0.1
55 to 64 years ⁽¹⁾	70.9	71.6	0.7
65 years and older ⁽¹⁾	23.7	24.0	0.3
Women			
16 years and older	56.9	57.4	0.5
16 to 24 years	54.0	54.8	0.8
16 to 19 years	35.8	36.9	1.1
20 to 24 years	68.2	68.9	0.7
25 to 54 years	75.0	75.8	0.8
25 to 34 years	75.6	76.5	0.9
35 to 44 years	75.1	75.3	0.2
45 to 54 years	74.4	75.3	0.9
55 years and older	34.6	35.0	0.4
55 to 64 years ⁽¹⁾	59.0	59.5	0.5
65 years and older ⁽¹⁾	15.5	16.3	0.8

Notes:

⁽¹⁾ Data for people 55 to 64 years old and 65 years and older are not seasonally adjusted.

Source: U.S. Bureau of Labor Statistics, Current Population Survey.

Among prime-working-age people (that is, 25- to 54-year-olds), the unemployment rate declined by 0.2 percentage point over the year to 3.2 percent in the fourth quarter of 2018. Over the year, the jobless rate for prime-working-age women decreased by 0.4 percentage point to 3.2 percent in the fourth quarter of 2018, while the rate, at 3.1 percent, changed little for prime-working-age men. (See table 2.)

Employment for people of prime working age continued to expand in 2018. The employment–population ratio for this group was up by 0.7 percentage point over the year to 79.7 percent in the fourth quarter of 2018. The ratio for prime-working-age men rose from 85.8 percent in the fourth quarter of 2017 to 86.3 percent in the fourth quarter of 2018. The ratio for prime-working-age women increased from 72.3 percent in the fourth quarter of 2017 to 73.3 percent in the fourth quarter of 2018.

The labor force participation rate for people of prime working age edged up from 81.8 percent in the fourth quarter of 2017 to 82.3 percent in the fourth quarter of 2018. Among prime-working-age men, the participation rate changed little in 2018, finishing the year at 89.0 percent. The participation rate for prime-working-age women increased over the year to 75.8 percent in the fourth quarter of 2018. The gap between the participation rates for prime-working-age men and women has been around 14 percent since 2008.

Among older workers (those age 55 and older), the jobless rate declined by 0.3 percentage point to 2.9 percent in the fourth quarter of 2018. Both older men and older women had similar unemployment rates by the end of the year. While the jobless rate for older men declined to 2.8 percent in the final quarter of the year, the rate for older women, at 2.9 percent, was little changed over the year.

After trending up since the mid-1990s, the employment–population ratio for older workers experienced a slight decline during the Great Recession (fourth quarter of 2007 through second quarter of 2009). Shortly after the recession, the employment–population ratio for older workers resumed its upward trend. In the fourth quarter of 2018, the ratio for older workers was 39.0 percent. Older men had an employment–population ratio of 44.9 percent in the fourth quarter of 2018, and older women had a ratio of 34.0 percent.

The labor force participation rate for older workers generally has been flat for the last 5 years. In the fourth quarter of 2018, their participation rate was 40.2 percent. The participation rates for both older men and older women have been relatively steady in recent years. Older men were more likely to participate in the labor force than older women (46.2 percent and 35.0 percent, respectively, in the fourth quarter of 2018).

Among older workers (those ages 55 and older), those ages 55 to 64 have a much higher labor force participation rate than the rate of those age 65 and older. These two older age groups also have different patterns in terms of labor force participation. For those ages 55 to 64, the labor force participation rate rose steadily from the mid-1980s, until it began to flatten out in 2009. In recent years, the participation rate for this group has resumed its upward trend. The labor force participation rate for those ages 55 to 64 was 65.3 percent in the fourth quarter of 2018. (Data for those ages 55 to 64 and those age 65 and older are not seasonally adjusted.) In contrast, the participation rate for those age 65 and older has continued to rise since the late 1990s, albeit at a slower pace since 2012. (See table 3.)

Jobless rates declined for high school graduates and those with some college or associate degree

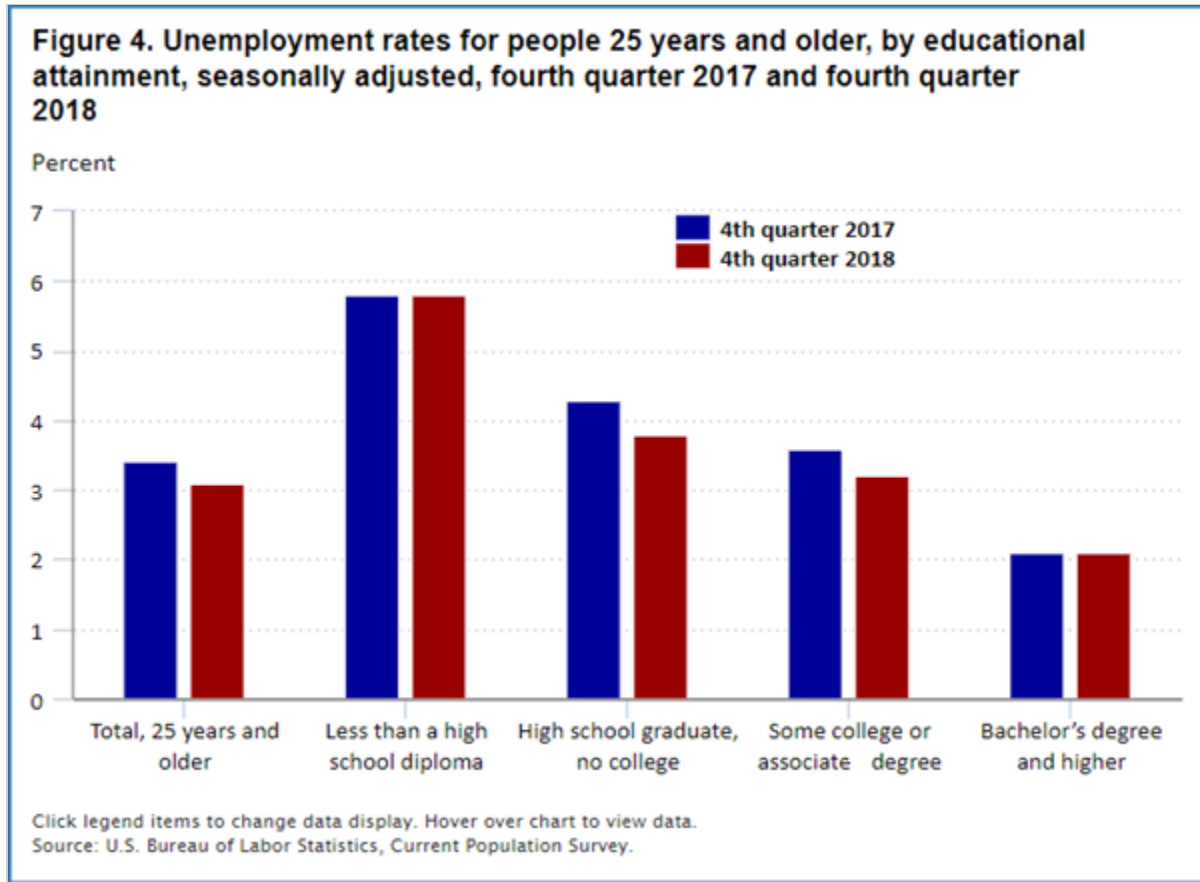
Among those age 25 and older, the unemployment rates for high school graduates (no college) and those with some college or associate degree declined in 2018.^[9] The jobless rate for high school graduates (no college) fell by 0.5 percentage point over the year to 3.8 percent in the fourth quarter of 2018. The jobless rate for people with some college or an associate degree declined by 0.4 percentage point from a year earlier to 3.2 percent in the last quarter of 2018. The unemployment rates for those with less than a high school diploma (5.8 percent) and people with a bachelor's degree and higher (2.1 percent) were unchanged over the year. (See table 4 and figure 4.)

Table 4. Employment status of the civilian noninstitutional population 25 years and older, by educational attainment, quarterly averages, seasonally adjusted, 2017–18 (levels in thousands)

Characteristic	Fourth quarter, 2017	2018				Change, fourth quarter, 2017–18
		First quarter	Second quarter	Third quarter	Fourth quarter	
Less than a high school diploma						
Civilian labor force	10,240	10,262	10,354	10,240	10,247	7
Participation rate	45.5	45.8	45.7	46.4	46.8	1.3
Employed	9,644	9,692	9,772	9,683	9,653	9
Employment–population ratio	42.8	43.2	43.1	43.9	44.1	1.3
Unemployed	596	570	582	557	594	–2
Unemployment rate	5.8	5.6	5.6	5.4	5.8	0.0
High school graduates, no college						
Civilian labor force	35,867	35,891	35,789	36,285	36,053	186
Participation rate	57.4	57.4	57.4	57.5	57.8	0.4
Employed	34,330	34,314	34,321	34,872	34,686	356
Employment–population ratio	55.0	54.9	55.1	55.3	55.6	0.6
Unemployed	1,537	1,577	1,468	1,414	1,367	–170
Unemployment rate	4.3	4.4	4.1	3.9	3.8	–0.5
Some college or associate degree						
Civilian labor force	37,865	37,704	37,842	37,396	37,393	–472
Participation rate	66.1	65.7	65.4	65.4	65.4	–0.7
Employed	36,486	36,396	36,582	36,161	36,213	–273
Employment–population ratio	63.7	63.5	63.2	63.2	63.3	–0.4
Unemployed	1,379	1,309	1,260	1,235	1,180	–199
Unemployment rate	3.6	3.5	3.3	3.3	3.2	–0.4
Bachelor’s degree and higher						
Civilian labor force	55,682	56,417	56,739	57,340	58,374	2,692
Participation rate	73.6	73.7	74.1	73.8	73.6	0.0
Employed	54,505	55,180	55,528	56,150	57,125	2,620
Employment–population ratio	72.1	72.1	72.5	72.2	72.0	–0.1
Unemployed	1,177	1,237	1,211	1,190	1,249	72
Unemployment rate	2.1	2.2	2.1	2.1	2.1	0.0

Note: Updated population controls are introduced annually with the release of January data.

Source: U.S. Bureau of Labor Statistics, Current Population Survey.



Unemployment rate declined for nonveterans but changed little for veterans

Of the 19.1 million veterans in the civilian noninstitutional population in the fourth quarter of 2018, the largest share—about 40 percent—served during World War II, the Korean War, and the Vietnam era (7.5 million). Another 4.2 million served during Gulf War era II, and 3.1 million served during Gulf War era I. There were 4.3 million veterans who served on Active Duty outside these designated wartime periods. Among veterans from all service periods, women accounted for about 10 percent of the total veteran population in the fourth quarter of 2018.^[10]

The unemployment rate for all veterans changed little over the year (3.0 percent in the fourth quarter of 2018), while the jobless rate for nonveterans decreased to 3.5 percent. (Data are not seasonally adjusted.) The unemployment rates for male (3.1 percent) and female (2.7 percent) veterans were little different in the fourth quarter of 2018 than the rates a year earlier. (These rates were also not statistically different from each other.) The jobless rate for male Gulf War-era II veterans (3.4 percent) and female Gulf War-era II veterans (3.3 percent) were also little different from the rates a year earlier. (See table 5.)

Table 5. Employment status of people 18 years and older, by veteran status, period of service, and sex, quarterly averages, not seasonally adjusted, 2017–18 (levels in thousands)

Employment status, veteran status, and period of service	Total			Men			Women		
	Fourth quarter, 2017	Fourth quarter, 2018	Change, fourth quarter, 2017–18	Fourth quarter, 2017	Fourth quarter, 2018	Change, fourth quarter, 2017–18	Fourth quarter, 2017	Fourth quarter, 2018	Change, fourth quarter, 2017–18
Veterans, 18 years and older									
Civilian labor force	9,801	9,388	-413	8,644	8,242	-402	1,157	1,146	-11
Participation rate	49.6	49.3	-0.3	48.4	48.0	-0.4	60.4	61.2	0.8
Employed	9,458	9,103	-355	8,338	7,988	-350	1,121	1,114	-7
Employment–population ratio	47.8	47.8	0.0	46.7	46.5	-0.2	58.5	59.5	1.0
Unemployed	343	285	-58	306	254	-52	36	32	-4
Unemployment rate	3.5	3.0	-0.5	3.5	3.1	-0.4	3.1	2.7	-0.4
Gulf War–era II veterans									
Civilian labor force	3,358	3,437	79	2,865	2,923	58	493	514	21
Participation rate	81.1	81.7	0.6	83.4	83.8	0.4	69.5	71.7	2.2
Employed	3,228	3,320	92	2,757	2,823	66	471	497	26
Employment–population ratio	77.9	78.9	1.0	80.3	80.9	0.6	66.4	69.3	2.9
Unemployed	130	116	-14	108	100	-8	22	17	-5
Unemployment rate	3.9	3.4	-0.5	3.8	3.4	-0.4	4.4	3.3	-1.1
Gulf War–era I veterans									
Civilian labor force	2,430	2,401	-29	2,086	2,043	-43	344	358	14
Participation rate	77.7	77.6	-0.1	79.1	78.5	-0.6	70.6	73.0	2.4
Employed	2,363	2,335	-28	2,028	1,983	-45	335	352	17
Employment–population ratio	75.6	75.4	-0.2	76.9	76.1	-0.8	68.8	71.8	3.0
Unemployed	67	66	-1	58	60	2	9	6	-3
Unemployment rate	2.7	2.8	0.1	2.8	3.0	0.2	2.5	1.7	-0.8
World War II, Korean War, and Vietnam–era veterans									
Civilian labor force	1,723	1,565	-158	1,657	1,505	-152	66	60	-6
Participation rate	21.8	21.0	-0.8	21.8	20.9	-0.9	24.2	23.4	-0.8
Employed	1,662	1,525	-137	1,596	1,466	-130	66	59	-7
Employment–population ratio	21.1	20.4	-0.7	20.9	20.3	-0.6	24.2	23.1	-1.1
Unemployed	61	40	-21	61	39	-22	0	1	1
Unemployment rate	3.6	2.6	-1.0	3.7	2.6	-1.1	0.0	1.5	—
Veterans of other service periods									
Civilian labor force	2,290	1,985	-305	2,036	1,771	-265	254	214	-40
Participation rate	49.7	46.3	-3.4	48.9	45.6	-3.3	57.1	52.2	-4.9
Employed	2,205	1,923	-282	1,957	1,717	-240	248	206	-42
Employment–population ratio	47.9	44.8	-3.1	47.0	44.2	-2.8	55.7	50.3	-5.4

See footnotes at end of table.

Table 5. Employment status of people 18 years and older, by veteran status, period of service, and sex, quarterly averages, not seasonally adjusted, 2017–18 (levels in thousands)

Employment status, veteran status, and period of service	Total			Men			Women		
	Fourth quarter, 2017	Fourth quarter, 2018	Change, fourth quarter, 2017–18	Fourth quarter, 2017	Fourth quarter, 2018	Change, fourth quarter, 2017–18	Fourth quarter, 2017	Fourth quarter, 2018	Change, fourth quarter, 2017–18
Unemployed	85	62	-23	79	55	-24	6	8	2
Unemployment rate	3.7	3.1	-0.6	3.9	3.1	-0.8	2.3	3.6	1.3
Nonveterans, 18 years and older									
Civilian labor force	148,315	151,198	2,883	75,369	76,801	1,432	72,945	74,398	1,453
Participation rate	65.4	65.5	0.1	74.6	74.3	-0.3	58.0	58.4	0.4
Employed	142,710	145,900	3,190	72,416	74,048	1,632	70,293	71,851	1,558
Employment–population ratio	62.9	63.2	0.3	71.6	71.6	0.0	55.9	56.4	0.5
Unemployed	5,605	5,299	-306	2,953	2,752	-201	2,652	2,546	-106
Unemployment rate	3.8	3.5	-0.3	3.9	3.6	-0.3	3.6	3.4	-0.2

Notes: Veterans are men and women who previously served on Active Duty in the U.S. Armed Forces and were not on Active Duty at the time of the survey. Nonveterans never served on Active Duty in the U.S. Armed Forces. Veterans could have served anywhere in the world during these periods of service: Gulf War era II (September 2001–present), Gulf War era I (August 1990–August 2001), Vietnam era (August 1964–April 1975), Korean War (July 1950–January 1955), World War II (December 1941–December 1946), and other service periods (all other periods). Veterans are only counted in one period of service—their most recent wartime period. Veterans who served in both a wartime period and any other service period are classified in the wartime period. Effective with data for November 2017, estimates for veterans incorporate population controls derived from an updated population model of the Department of Veterans Affairs. In accordance with usual practice, BLS did not revise estimates for previous years. Dash indicates no data or data that do not meet publication criteria (values not shown in which base is less than 60,000).

Source: U.S. Bureau of Labor Statistics, Current Population Survey.

In the fourth quarter of 2018, 49.3 percent of veterans participated in the labor force, while 65.5 percent of nonveterans participated in the labor force. Both measures were little changed from the fourth quarter of 2017. The difference in labor force participation rates between veterans and nonveterans reflects the age profile of veterans who served during World War II, the Korean War, and the Vietnam era, all of whom are now over age 60. Labor force participation rates—whether for veterans or for nonveterans—tend to be lower for older people than the rates for those of prime working age. For instance, the labor force participation rate for those who served during World War II, the Korean War, and the Vietnam era was 21.0 percent in the fourth quarter of 2018. In contrast, Gulf War-era II veterans—who tend to be younger—had a much higher participation rate (81.7 percent in the fourth quarter of 2018). Both measures were little different from the measure of the prior year.

Labor market improved for people without a disability but changed little for those with a disability

Labor market indicators for people with a disability changed little in 2018, although recent years have seen some modest improvements. Out of the 30.3 million people age 16 and older with a disability in the fourth quarter of 2018, 6.4 million, or 21.1 percent, participated in the labor force, much lower than the rate of 68.4 percent for people with no disability. (Data are not seasonally adjusted.) The lower participation rate for people with a

disability, compared with the participation rate of those with no disability, reflects, in part, the older age profile of those with a disability. About half of all people with a disability were age 65 and older, nearly 3 times the share of those with no disability. The labor force participation rates for both people with and without disabilities changed little over the year. (See table 6.)

Table 6. Employment status of the civilian noninstitutional population, by sex, age, and disability status, quarterly averages, not seasonally adjusted, 2017–18 (levels in thousands)

Employment status, sex, and age	People with a disability			People with no disability		
	Fourth quarter, 2017	Fourth quarter, 2018	Change, fourth quarter, 2017–18	Fourth quarter, 2017	Fourth quarter, 2018	Change, fourth quarter, 2017–18
Total, 16 years and older						
Civilian labor force	6,264	6,384	120	154,006	156,248	2,242
Participation rate	20.9	21.1	0.2	68.2	68.4	0.2
Employed	5,753	5,895	142	148,248	150,921	2,673
Employment– population ratio	19.2	19.4	0.2	65.6	66.1	0.5
Unemployed	511	490	–21	5,758	5,327	–431
Unemployment rate	8.2	7.7	–0.5	3.7	3.4	–0.3
Men, 16 to 64 years						
Civilian labor force	2,771	2,700	–71	76,915	77,683	768
Participation rate	36.8	35.7	–1.1	82.1	82.4	0.3
Employed	2,522	2,483	–39	73,915	74,921	1,006
Employment– population ratio	33.5	32.9	–0.6	78.9	79.5	0.6
Unemployed	249	217	–32	3,001	2,762	–239
Unemployment rate	9.0	8.0	–1.0	3.9	3.6	–0.3
Women, 16 to 64 years						
Civilian labor force	2,332	2,486	154	68,630	69,494	864
Participation rate	30.1	31.6	1.5	70.9	71.6	0.7
Employed	2,125	2,267	142	66,135	67,171	1,036
Employment– population ratio	27.4	28.9	1.5	68.4	69.2	0.8
Unemployed	206	219	13	2,495	2,323	–172
Unemployment rate	8.8	8.8	0.0	3.6	3.3	–0.3
Total, 65 years and older						
Civilian labor force	1,162	1,199	37	8,461	9,071	610
Participation rate	7.9	8.0	0.1	23.9	24.5	0.6
Employed	1,106	1,145	39	8,198	8,829	631
Employment– population ratio	7.5	7.7	0.2	23.1	23.8	0.7
Unemployed	55	54	–1	263	243	–20
Unemployment rate	4.8	4.5	–0.3	3.1	2.7	–0.4

Notes: A person with a disability has at least one of the following conditions: deafness or serious difficulty hearing; blindness or serious difficulty seeing even when wearing glasses; serious difficulty concentrating, remembering, or making decisions because of a physical, mental, or emotional condition; serious difficulty walking or climbing stairs; difficulty dressing or bathing; or difficulty doing errands alone, such as visiting a doctor's office or shopping because of a physical, mental, or emotional condition. Updated population controls are introduced annually with the release of January data.

Source: U.S. Bureau of Labor Statistics, Current Population Survey.

The employment–population ratio for people with a disability, at 19.4 percent, changed little from the fourth quarter of 2017 to the fourth quarter of 2018. People without a disability tend to have a much higher employment–population ratio than people with a disability. The employment–population ratio for those without a disability was 66.1 percent in the final quarter of 2018, up by 0.5 percentage point.

The unemployment rate for people with a disability was little changed over the year, at 7.7 percent in the last quarter of 2018. Nevertheless, the rate for this group was still more than double than the rate for people without a disability (3.4 percent in the fourth quarter of 2018). The jobless rate for people with a disability generally has been trending down for several years and fell to a series low in 2018 (averaging 8.0 percent for the year). The unemployment rate for those without a disability declined over the year.^[11]

Unemployment rates declined for both native- and foreign-born individuals

The foreign born accounted for 17.5 percent of the U.S. civilian labor force age 16 and older in the fourth quarter of 2018.^[12] The unemployment rate for foreign-born individuals declined to 3.2 percent over the year, and the rate for native-born people declined to 3.7 percent. (Data are not seasonally adjusted.) (See table 7.)

Table 7. Employment status of the foreign- and native-born populations, by sex, quarterly averages, not seasonally adjusted, 2017–18 (levels in thousands)

Employment status and nativity	Total			Men			Women		
	Fourth quarter, 2017	Fourth quarter, 2018	Change, fourth quarter, 2017–18	Fourth quarter, 2017	Fourth quarter, 2018	Change, fourth quarter, 2017–18	Fourth quarter, 2017	Fourth quarter, 2018	Change, fourth quarter, 2017–18
Foreign born, 16 years and older									
Civilian labor force	27,304	28,495	1,191	15,661	16,247	586	11,643	12,249	606
Participation rate	65.5	66.1	0.6	77.9	77.9	0.0	53.9	55.0	1.1
Employed	26,296	27,577	1,281	15,164	15,782	618	11,131	11,795	664
Employment–population ratio	63.1	64.0	0.9	75.5	75.7	0.2	51.6	53.0	1.4
Unemployed	1,008	918	–90	497	464	–33	512	454	–58
Unemployment rate	3.7	3.2	–0.5	3.2	2.9	–0.3	4.4	3.7	–0.7
Native-born, 16 years and older									
Civilian labor force	132,966	134,137	1,171	69,343	69,724	381	63,624	64,413	789
Participation rate	62.1	62.2	0.1	66.9	66.9	0.0	57.5	57.9	0.4
Employed	127,706	129,239	1,533	66,405	67,059	654	61,300	62,179	879
Employment–population ratio	59.6	59.9	0.3	64.1	64.3	0.2	55.4	55.9	0.5
Unemployed	5,260	4,898	–362	2,937	2,664	–273	2,323	2,234	–89
Unemployment rate	4.0	3.7	–0.3	4.2	3.8	–0.4	3.7	3.5	–0.2

Notes: The foreign born are people who reside in the United States but who were born outside the United States or one of its outlying areas, such as Puerto Rico or Guam, to parents who were not U.S. citizens. This group includes legally admitted immigrants, refugees, students, temporary workers, and undocumented immigrants. The survey data, however, do not separately identify the number of people in these categories. The native born are people who were born in the United States or one of its outlying areas, such as Puerto Rico or Guam, or who were born abroad of at least one parent who was a U.S. citizen.

See footnotes at end of table.

Source: U.S. Bureau of Labor Statistics, Current Population Survey.

Foreign-born individuals continued to have a slightly higher labor force participation rate than that of native-born individuals in 2018. Both the labor force participation rate for the foreign born, at 66.1 percent in the fourth quarter of 2018, and the participation rate for the native born, at 62.2 percent, were little changed over the year.

A deeper look at unemployment and employment

The next section examines the unemployed by their duration and reason for unemployment. It also looks more closely at unemployment and employment by occupation. One takeaway is that even though unemployment rates have declined to the lowest levels in nearly 50 years, many of those who are unemployed have been without work for an extended period. For example, many unemployed people have been actively searching for a job for 27 weeks, 52 weeks, or even 99 weeks and longer. At the same time though, the number of unemployed job losers continued to decline and employment rose for most major occupational categories in 2018.

Unemployment declined for people who lost their job or completed a temporary job

Unemployed people in the CPS are defined as those age 16 and older who meet all the following criteria: had no employment during the survey reference week, actively searched for work in the prior 4 weeks, and are currently available for work. As previously noted, 6.1 million people were classified as unemployed in the fourth quarter of 2018. Unemployed people are grouped by reason for their unemployment. People are unemployed because they either (1) were on temporary layoff, permanently lost their job, or completed a temporary job; (2) left their job; (3) reentered the labor force (reentrants); or (4) entered the labor force for the first time (new entrants). (See table 8 and figure 5.)

Table 8. Unemployed people, by reason and duration of unemployment, quarterly averages, seasonally adjusted, 2017–18 (levels in thousands)

Reason and duration	Fourth quarter, 2017	2018				Change, fourth quarter, 2017–18
		First quarter	Second quarter	Third quarter	Fourth quarter	
Reason for unemployment						
Job losers and people who completed temporary jobs	3,220	3,192	2,967	2,886	2,868	-352
On temporary layoff	907	881	865	849	786	-121
Not on temporary layoff	2,313	2,311	2,102	2,038	2,082	-231
Permanent job losers	1,640	1,633	1,444	1,348	1,378	-262
People who completed temporary jobs	673	677	659	690	704	31
Job leavers	741	790	819	813	755	14
Reentrants	2,006	1,960	1,982	1,852	1,917	-89
New entrants	633	652	587	588	590	-43
Percent distribution						

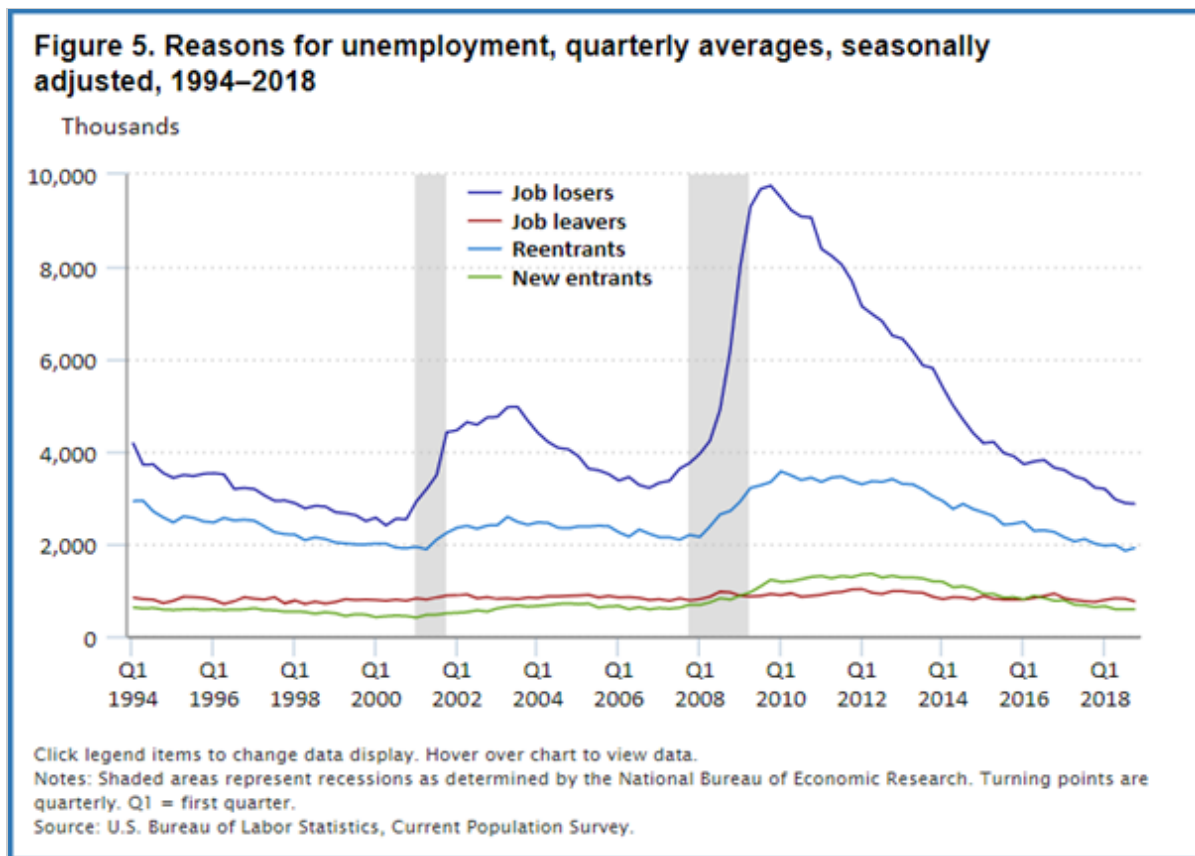
See footnotes at end of table.

Table 8. Unemployed people, by reason and duration of unemployment, quarterly averages, seasonally adjusted, 2017–18 (levels in thousands)

Reason and duration	Fourth quarter, 2017	2018				Change, fourth quarter, 2017–18
		First quarter	Second quarter	Third quarter	Fourth quarter	
Job losers and people who completed temporary jobs	48.8	48.4	46.7	47.0	46.8	-2.0
On temporary layoff	13.7	13.4	13.6	13.8	12.8	-0.9
Not on temporary layoff	35.0	35.0	33.1	33.2	34.0	-1.0
Job leavers	11.2	12.0	12.9	13.2	12.3	1.1
Reentrants	30.4	29.7	31.2	30.2	31.3	0.9
New entrants	9.6	9.9	9.2	9.6	9.6	0.0
Duration of unemployment						
Less than 5 weeks	2,213	2,331	2,119	2,119	2,105	-108
5 to 14 weeks	1,953	1,935	1,915	1,763	1,905	-48
15 weeks or longer	2,488	2,320	2,274	2,288	2,185	-303
15 to 26 weeks	909	931	949	916	874	-35
27 weeks or longer	1,579	1,389	1,325	1,372	1,312	-267
Average (mean) duration in weeks	24.8	23.7	21.9	23.3	21.9	-2.9
Median duration, in weeks	9.4	9.3	9.4	9.4	9.2	-0.2
Percent distribution						
Less than 5 weeks	33.3	35.4	33.6	34.3	34.0	0.7
5 to 14 weeks	29.4	29.4	30.4	28.6	30.7	1.3
15 weeks or longer	37.4	35.2	36.0	37.1	35.3	-2.1
15 to 26 weeks	13.7	14.1	15.0	14.8	14.1	0.4
27 weeks or longer	23.7	21.1	21.0	22.2	21.2	-2.5

Note: Updated population controls are introduced annually with the release of January data.

Source: U.S. Bureau of Labor Statistics, Current Population Survey.

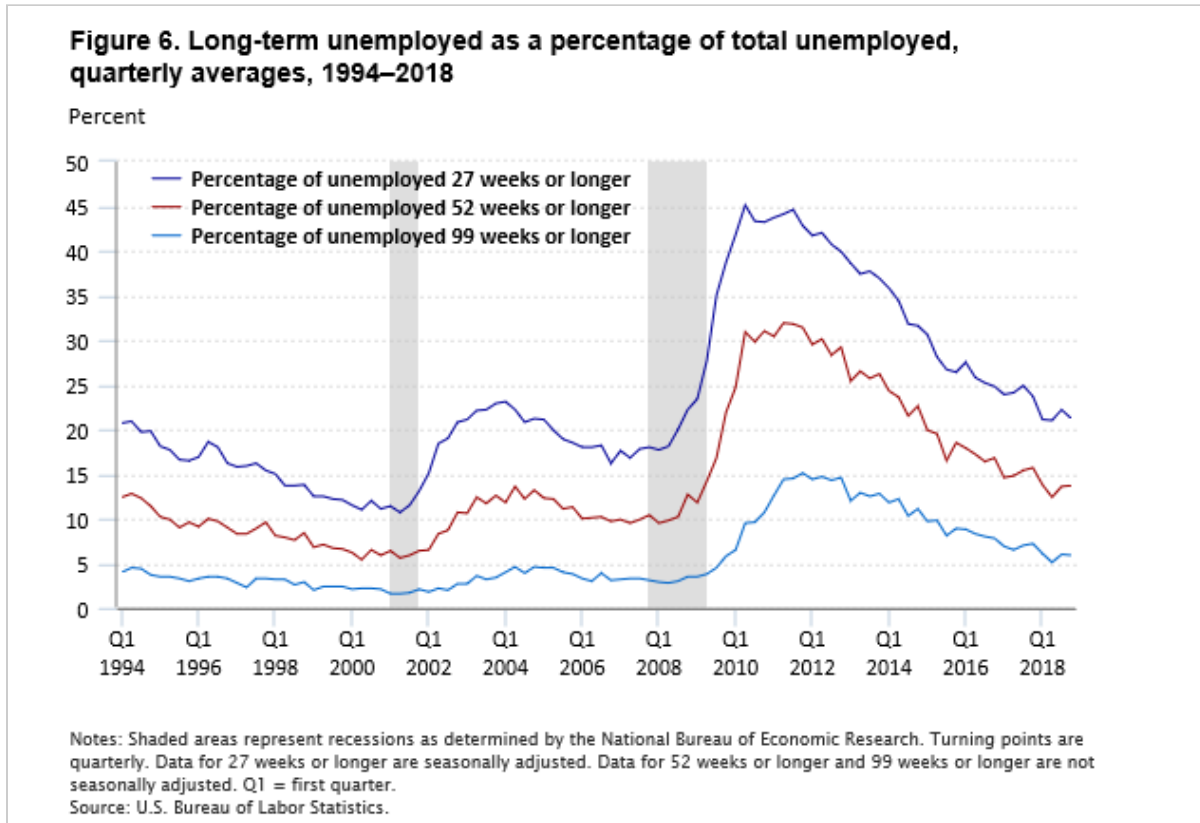


The number of unemployed people who lost their job or who completed temporary jobs declined by 352,000 over the year to 2.9 million in the fourth quarter of 2018, at which time they accounted for 46.8 percent of the unemployed. The number of reentrants—unemployed people who previously worked but were out of the labor force prior to beginning their job search—changed little in 2018, at 1.9 million in the fourth quarter. Reentrants, the second largest group among the unemployed when viewed by reason for unemployment, comprised 31.3 percent of the unemployed in the fourth quarter of 2018. The number of job leavers (people who voluntarily left their job), at 755,000, was essentially unchanged over the year. Job leavers comprised 12.3 percent of the unemployed in the last quarter of 2018. Lastly, new entrants totaled 590,000 in the fourth quarter of 2018—little changed over the year. These individuals accounted for 9.6 percent of the unemployed.

Long-term unemployment decreased but remained elevated by historical standards

The number of people experiencing long-term unemployment (those who had been looking for work for 27 weeks or longer) decreased in 2018. In the fourth quarter of 2018, 1.3 million people were long-term unemployed, down by 267,000 over the year. The long-term unemployed comprised 21.2 percent of the total unemployed in the fourth quarter of 2018. This proportion was down by 2.5 percentage points over the year. Despite this decline, the proportion of the long-term unemployed was still above the prerecession level of 17.8 percent registered in the third quarter of 2007, clearly indicating that some people are still having great difficulty finding a job. Moreover, in the fourth quarter of 2018, 13.7 percent of unemployed people had been looking for work for a year or more and 5.9 percent had been searching for work for more than 99 weeks, or almost 2 years. These figures also remain

above prerecession levels. (Data for those unemployed for 52 weeks or longer and 99 weeks or longer are not seasonally adjusted.) (See table 8 and figure 6.)



All five major occupational categories experienced jobless rate declines

In 2018, unemployment rates declined for all five major occupational categories.^[13] (Data are annual averages.) Management, professional, and related occupations continued to have the lowest unemployment rate among the five major occupational groups in 2018; the rate for this occupational category was 2.1 percent in 2018, down by 0.1 percentage point from the rate in 2017. The jobless rate for sales and office occupations was 3.8 percent in 2018, down by 0.3 percentage point. Production, transportation, and material moving occupations had a jobless rate of 4.5 percent in 2018, down by 0.9 percentage point. The jobless rate for service occupations declined by 0.6 percentage point to 4.8 percent in 2018. Natural resources, construction, and maintenance occupations had an unemployment rate of 5.1 percent in 2018. The rate for this occupational category declined by 0.9 percentage point from 2017 to 2018. (See table 9.)

Table 9. Unemployment rates, by occupational group and sex, annual averages, 2017–18

Occupational group	Total			Men			Women		
	2017	2018	Change 2017–18	2017	2018	Change 2017–18	2017	2018	Change 2017–18
Management, professional, and related occupations	2.2	2.1	-0.1	2.1	2.0	-0.1	2.3	2.2	-0.1

See footnotes at end of table.

Table 9. Unemployment rates, by occupational group and sex, annual averages, 2017–18

Occupational group	Total			Men			Women		
	2017	2018	Change 2017–18	2017	2018	Change 2017–18	2017	2018	Change 2017–18
Management, business, and financial operations occupations	2.2	2.0	-0.2	2.0	1.9	-0.1	2.4	2.1	-0.3
Professional and related occupations	2.3	2.2	-0.1	2.3	2.1	-0.2	2.3	2.3	0.0
Service occupations	5.4	4.8	-0.6	5.4	5.1	-0.3	5.4	4.6	-0.8
Healthcare support occupations	4.5	3.4	-1.1	4.0	3.0	-1.0	4.6	3.5	-1.1
Protective service occupations	3.3	2.7	-0.6	2.4	2.6	0.2	6.4	3.0	-3.4
Food preparation and serving related occupations	6.4	6.1	-0.3	6.9	6.7	-0.2	6.1	5.6	-0.5
Building and grounds cleaning and maintenance occupations	6.2	5.5	-0.7	6.5	5.8	-0.7	5.7	4.9	-0.8
Personal care and service occupations	4.8	4.3	-0.5	4.6	3.9	-0.7	4.9	4.4	-0.5
Sales and office occupations	4.1	3.8	-0.3	3.7	3.6	-0.1	4.4	4.0	-0.4
Sales and related occupations	4.2	4.1	-0.1	2.9	3.3	0.4	5.6	4.8	-0.8
Office and administrative support occupations	4.0	3.6	-0.4	5.0	4.2	-0.8	3.6	3.4	-0.2
Natural resources, construction, and maintenance occupations	6.0	5.1	-0.9	5.7	4.9	-0.8	10.9	8.2	-2.7
Farming, fishing, and forestry occupations	8.7	9.2	0.5	7.0	8.0	1.0	13.7	12.6	-1.1
Construction and extraction occupations	7.1	6.0	-1.1	6.9	6.0	-0.9	12.0	6.4	-5.6
Installation, maintenance, and repair occupations	3.5	2.6	-0.9	3.4	2.6	-0.8	5.0	4.1	-0.9
Production, transportation, and material moving occupations	5.4	4.5	-0.9	5.1	4.3	-0.8	6.3	5.3	-1.0
Production occupations	4.9	4.0	-0.9	4.6	3.7	-0.9	5.5	4.8	-0.7
Transportation and material moving occupations	5.8	5.0	-0.8	5.4	4.8	-0.6	7.5	5.9	-1.6

Note: The unemployed are classified by occupation according to their last job, which may or may not be similar to the job they are currently looking for.

Source: U.S. Bureau of Labor Statistics, Current Population Survey.

Employment rose for most major occupational categories

Employment rose in three of the five major occupational groups. From 2017 to 2018, employment in production, transportation, and material moving occupations expanded by 612,000, or 3.4 percent, to 18.5 million. Employment in management, professional, and related occupations rose by 1.5 million—or 2.5 percent—to 62.4 million in 2018. Employment in natural resources, construction, and maintenance occupations also experienced gains from 2017 to 2018, increasing by 278,000 to 14.5 million; this occupational group grew by 2.0 percent from 2017 to 2018. Employment in sales and office occupations and in service occupations changed little from 2017 to 2018. (See table 10.)

Table 10. Employment, by occupational group and sex, annual averages, 2017–18 (levels in thousands)

Occupational group	Total			Men			Women		
	2017	2018	Change 2017–18	2017	2018	Change 2017–18	2017	2018	Change 2017–18
Total, 16 years and older	153,337	155,761	2,424	81,402	82,698	1,296	71,936	73,063	1,127
Management, professional, and related occupations	60,901	62,436	1,535	29,488	30,287	799	31,413	32,149	736
Management, business, and financial operations occupations	25,379	25,850	471	14,207	14,464	257	11,171	11,387	216
Professional and related occupations	35,522	36,586	1,064	15,281	15,823	542	20,241	20,763	522
Service occupations	26,751	26,854	103	11,621	11,416	-205	15,130	15,439	309
Healthcare support occupations	3,506	3,629	123	451	469	18	3,055	3,161	106
Protective service occupations	3,113	3,203	90	2,418	2,483	65	694	720	26
Food preparation and serving related occupations	8,305	8,220	-85	3,840	3,655	-185	4,465	4,565	100
Building and grounds cleaning and maintenance occupations	5,888	5,854	-34	3,491	3,434	-57	2,397	2,421	24
Personal care and service occupations	5,939	5,947	8	1,421	1,375	-46	4,518	4,572	54
Sales and office occupations	33,566	33,461	-105	12,973	13,008	35	20,593	20,453	-140
Sales and related occupations	15,815	15,806	-9	8,045	7,999	-46	7,770	7,807	37
Office and administrative support occupations	17,751	17,655	-96	4,929	5,010	81	12,823	12,646	-177
Natural resources, construction, and maintenance occupations	14,193	14,471	278	13,473	13,726	253	720	745	25
Farming, fishing, and forestry occupations	1,184	1,121	-63	907	848	-59	278	273	-5
Construction and extraction occupations	8,031	8,338	307	7,788	8,053	265	243	285	42
Installation, maintenance, and repair occupations	4,977	5,012	35	4,778	4,825	47	200	187	-13
Production, transportation, and material moving occupations	17,927	18,539	612	13,846	14,261	415	4,080	4,278	198
Production occupations	8,482	8,621	139	6,031	6,140	109	2,450	2,480	30
Transportation and material moving occupations	9,445	9,918	473	7,815	8,121	306	1,630	1,797	167

Note: Updated population controls are introduced annually with the release of January data.

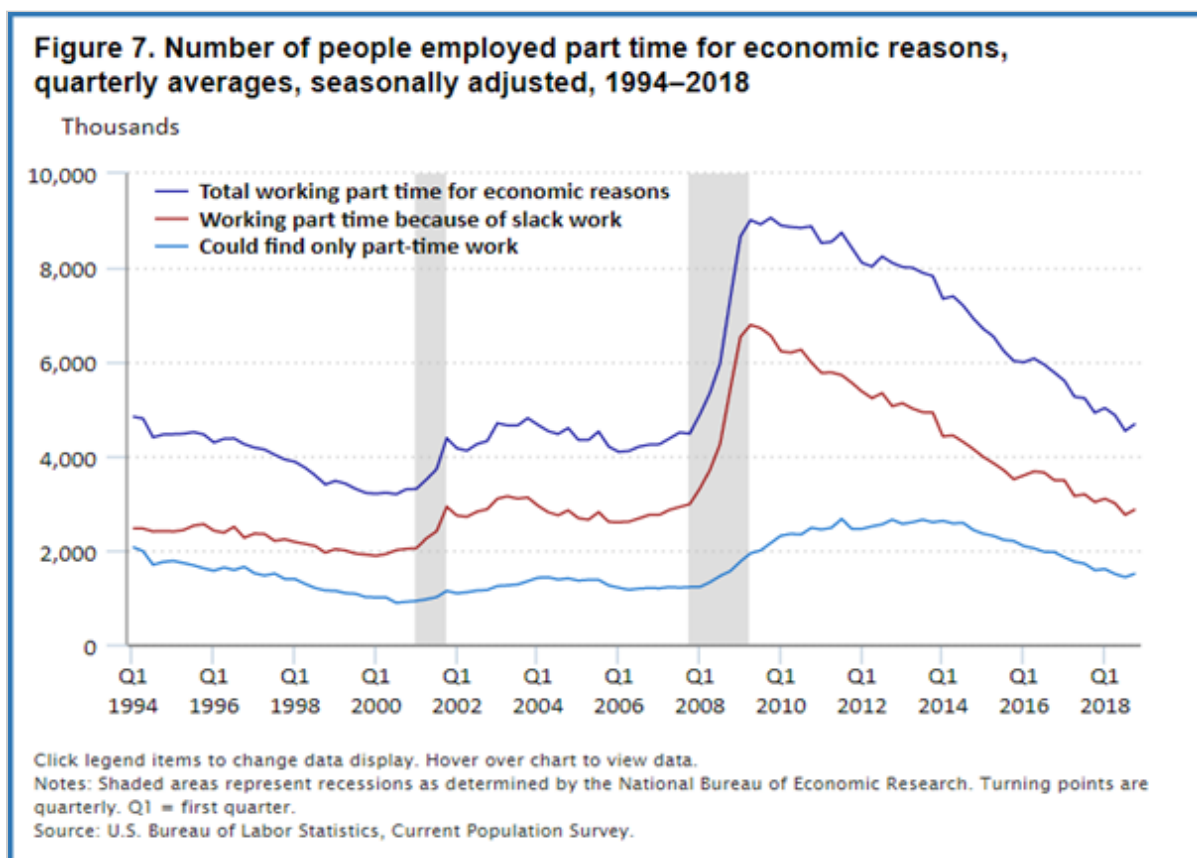
Source: U.S. Bureau of Labor Statistics, Current Population Survey.

Other barometers used to gauge labor market health

Additional CPS measures are widely used to provide further insight into the U.S. labor market performance. These supplementary measures—including the number of people who work part time for economic reasons (also known as involuntary part-time workers), various measures of people not in the labor force (such as people marginally attached to the labor force and discouraged workers), alternative measures of labor underutilization, and labor force flows—shed more light on U.S. labor market developments in 2018.

Number of involuntary part-time workers declined

The number of people employed part time for economic reasons—those who work 1 to 34 hours a week for an economic reason—is a key cyclical labor market indicator, and it may also provide clues into structural changes that occur in the U.S. economy. For example, some research has suggested that the rise in involuntary part-time workers reflects “advances in technology and globalization” and “changes in industry composition.”^[14] These individuals are often viewed as underemployed because they prefer full-time employment, but they are working reduced hours because of unfavorable business conditions (slack work) or the inability to find full-time jobs. Over the year, the number of involuntary part-time workers declined by 232,000 to 4.7 million in the fourth quarter of 2018. Involuntary part-time workers accounted for 3.0 percent of total employment at the end of 2018. The number of people who were involuntary part-time workers because of slack work or business conditions edged down in 2018, and the number who could only find part-time work was little changed from a year earlier. (See figure 7.)



Number of people not in the labor force changed little

The labor force comprises the employed and the unemployed. The remainder—those who had no job during the survey reference week and were not actively looking for work (or on temporary layoff) in the last 4 weeks—are classified as not in the labor force.^[15] In the fourth quarter of 2018, 96.1 million people were not in the labor force, little changed from a year earlier. (Data are not seasonally adjusted.) (See table 11 and figure 8.) Of those not in the labor force, about 2 in 5 were age 65 and older.

Table 11. Number of people not in the labor force, fourth-quarter averages, not seasonally adjusted, 2014–18 (levels in thousands)

Category	Fourth quarter, 2014	Fourth quarter, 2015	Fourth quarter, 2016	Fourth quarter, 2017	Fourth quarter, 2018	Change, fourth quarter, 2017–18
Total not in the labor force	92,698	94,442	95,134	95,671	96,071	400
People who do not currently want a job ⁽¹⁾	86,511	88,864	89,605	90,709	90,995	286
People who currently want a job	6,187	5,578	5,529	4,962	5,076	114
Marginally attached to the labor force ⁽²⁾	2,187	1,822	1,772	1,546	1,575	29
Discouraged workers ⁽³⁾	736	641	502	489	445	–44
Other people marginally attached to the labor force ⁽⁴⁾	1,451	1,181	1,271	1,057	1,130	73

Notes:

⁽¹⁾ Includes some people who are not asked if they want a job.

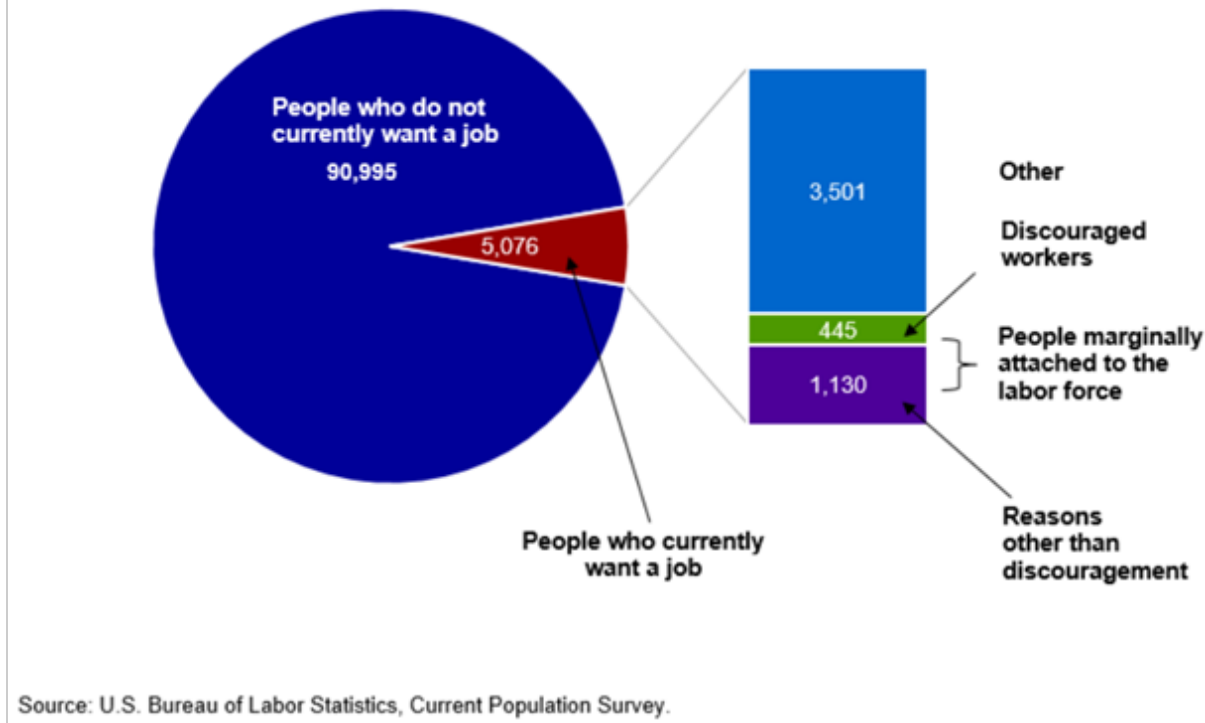
⁽²⁾ Data refer to people who want a job, have searched for work during the prior 12 months, and were available to take a job during the reference week, but had not looked for work in the past 4 weeks.

⁽³⁾ These people are not currently looking for work because they are discouraged over their job prospects. For example, these individuals may indicate that no jobs are available for them; they lack education, training, or experience needed to find a job; or they believe they face some type of discrimination, such as being too young or too old.

⁽⁴⁾ Includes those who did not actively look for work in the prior 4 weeks, for such reasons as school or family responsibilities, ill health, and transportation problems, as well as a number for whom reason for nonparticipation was not determined.

Source: U.S. Bureau of Labor Statistics, Current Population Survey.

Figure 8. People not in the labor force, not seasonally adjusted, fourth quarter of 2018



People who are not in the labor force are asked if they currently want a job. In the fourth quarter of 2018, 5.1 million, or 5.3 percent, of people not in the labor force indicated they wanted a job, even though they were not currently looking for one.

A subset of those not in the labor force who want a job are classified as marginally attached to the labor force. These individuals in this subset were not in the labor force, wanted and were available for work, and had looked for a job sometime in the prior 12 months. They were not counted as unemployed because they had not searched for work in the 4 weeks preceding the survey. In the fourth quarter of 2018, 1.6 million people were marginally attached to the labor force, essentially unchanged from a year earlier.

Among the marginally attached are discouraged workers—people not currently looking for work specifically because they are discouraged over their job prospects.^[16] In the fourth quarter of 2018, the number of discouraged workers (445,000) was little different from the number a year earlier.

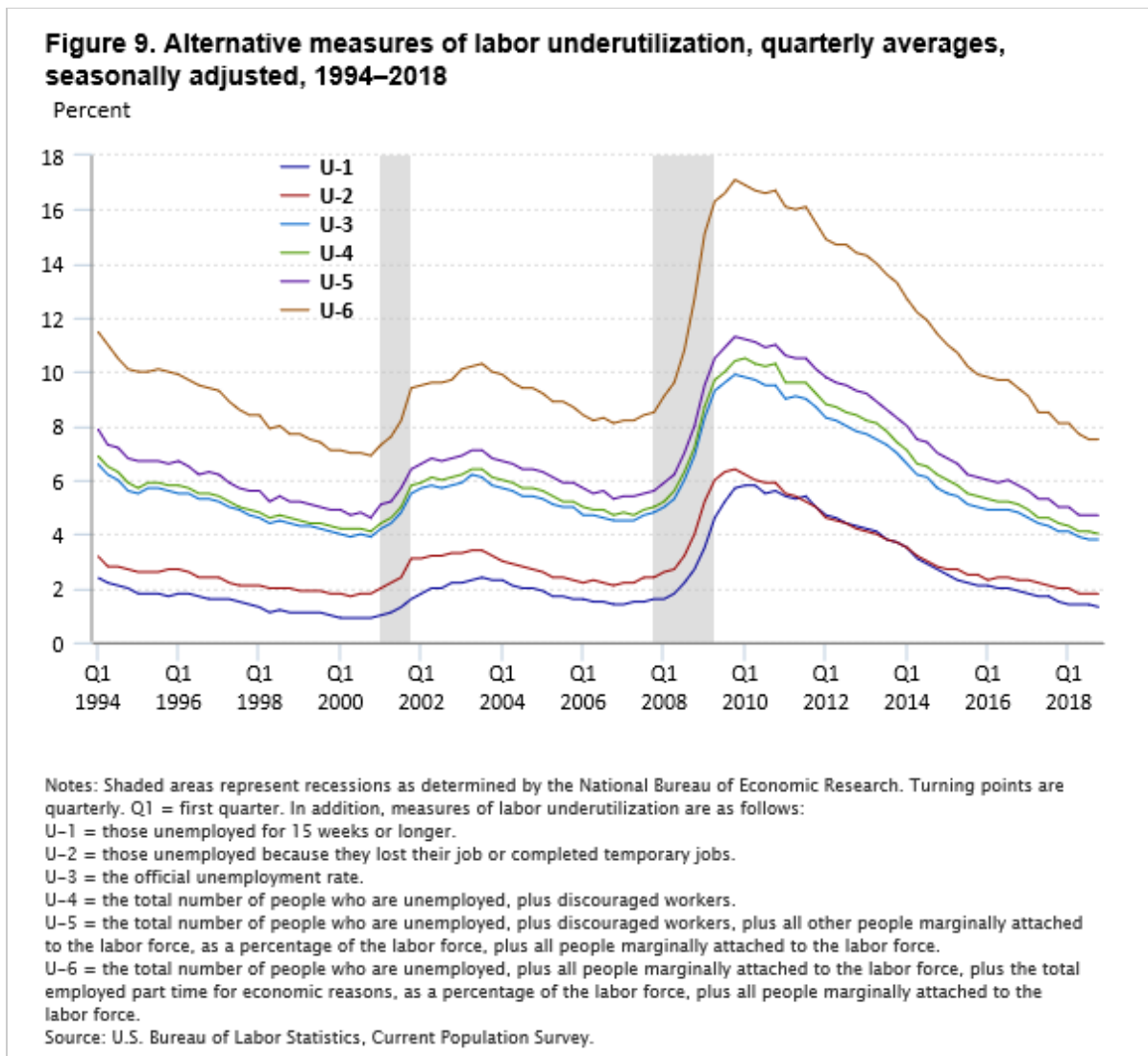
The remaining 1.1 million people marginally attached to the labor force in the fourth quarter of 2018 had not searched for work for reasons other than discouragement, such as school attendance, family responsibilities, health-related issues, and other reasons not identified separately in the CPS. The number of these individuals also changed little over the year.

Alternative measures of labor underutilization

In addition to BLS publishing the national unemployment rate each month, BLS publishes a range of alternative measures of labor underutilization: U-1, U-2, U-4, U-5, and U-6 (in this typology, the official unemployment rate is referred to as U-3).^[17]

Alternative measures U-1 and U-2 are more restrictive than the official definition of unemployment. These narrower measures track groups of unemployed people who typically face some degree of financial hardship or difficulty—those unemployed for 15 weeks or longer (U-1) and those unemployed because they lost their job or completed temporary jobs (U-2). The measures U-4, U-5, and U-6 present broader gauges of labor underutilization that include some people who are underemployed or not in the labor force. Essentially, these broader measures look at more than just unemployment, bringing in a broader group of individuals with labor market difficulties.

In the fourth quarter of 2018, all alternative measures declined. U-1 and U-2 declined to 1.3 percent and 1.8 percent, respectively. U-3—the official unemployment rate—fell to 3.8 percent in the fourth quarter of 2018. Among the broader alternative measures, U-4 declined to 4.0 percent and U-5 decreased to 4.7 percent. U-6, the broadest alternative measure, declined to 7.5 percent in the fourth quarter of 2018, the same rate registered in the third quarter; this was the lowest rate since the first quarter of 2001. (See figure 9.)

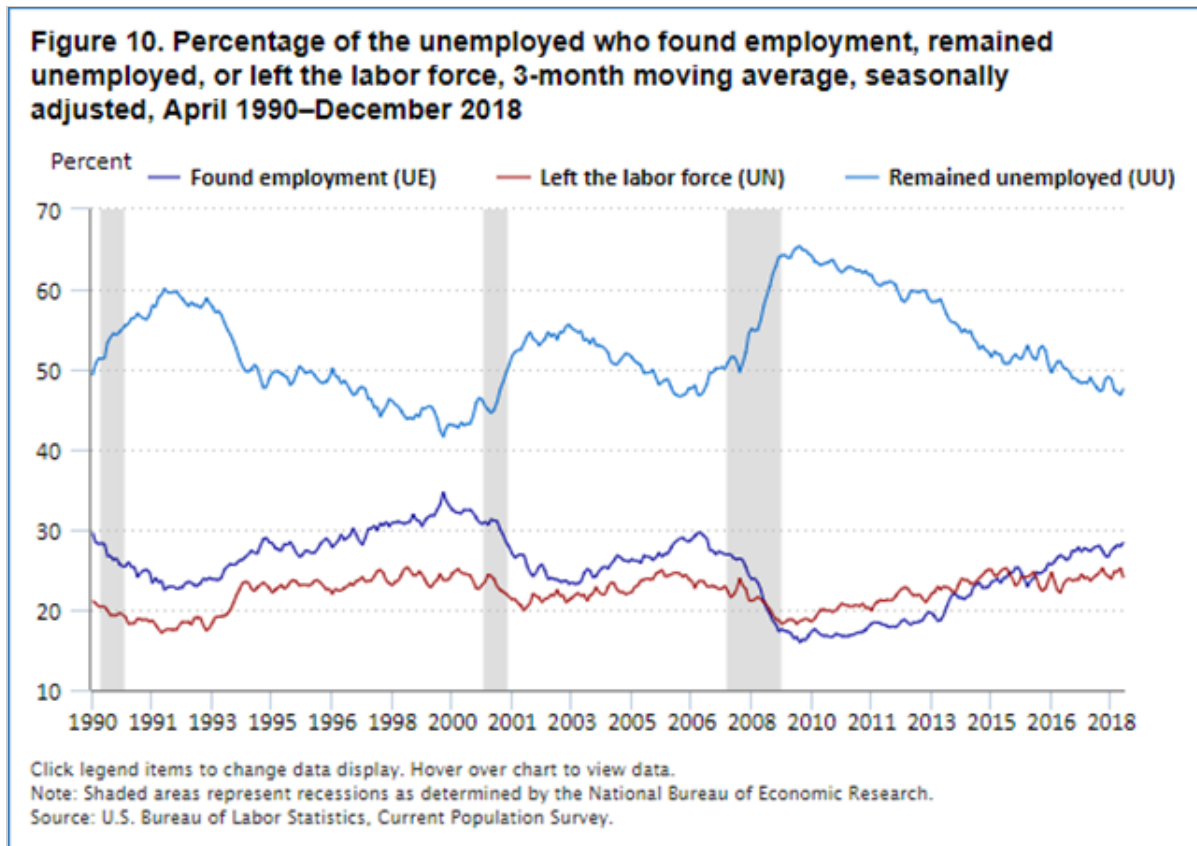


Unemployment decline reflected in labor force flows

In any given month, an individual surveyed in the CPS can be classified in 1 of 3 labor force states: employed (E), unemployed (U), or not in the labor force (N). From one month to the next, an individual’s labor force status can change or remain the same. For example, a person could transition from being unemployed to employed, or an employed person could remain employed. The CPS labor force flows estimates measure these transitions each month and can help explain changes in the unemployment rate.^[18] In 2018, 15.8 million people, or 6.1 percent of the population age 16 and older, changed their labor force status in an average month.

Among the unemployed, the likelihood of a person remaining unemployed (UU) over the month continued to trend down in 2018. In times of economic expansion, the likelihood of a person remaining unemployed over the month usually decreases. In December 2018, 47.6 percent of those who were unemployed in November remained unemployed, down from a peak of 65.4 percent in December 2009. (Data are seasonally adjusted 3-month moving averages.)

Before the Great Recession, those who were unemployed had been more likely to find employment than to leave the labor force (26.9 percent and 23.0 percent, respectively, in November 2007). During the recession, the share of those unemployed who left the labor force became higher than the share of those who found employment. Since 2016, the unemployed have been more likely to find a job than to leave the labor force. In December 2018, the likelihood of an unemployed person finding a job (UE) was 28.4 percent and the likelihood of an unemployed person leaving the labor force (UN) was 24.0 percent. (See figure 10.)



Median usual weekly earnings rose by 3.0 percent from 2017 to 2018

Median usual weekly earnings of full-time wage and salary workers increased to \$886 in 2018.^[19] (Data are annual averages and are in current dollars.) Women had median weekly earnings of \$789, or 81.1 percent of the \$973 median weekly earnings for men. Men’s earnings grew at a higher rate, at 3.4 percent, than women’s weekly earnings, at 2.5 percent, from 2017 to 2018. (See table 12 and figure 11.)

Table 12. Median usual weekly earnings of full-time wage and salary workers by selected characteristics, annual averages, 2017–18

Characteristic	2017	2018	Percent change, 2017–18
In constant (1982–84) dollars			
Total, 16 years and older	\$351	\$353	0.6
Men	\$384	\$387	0.8

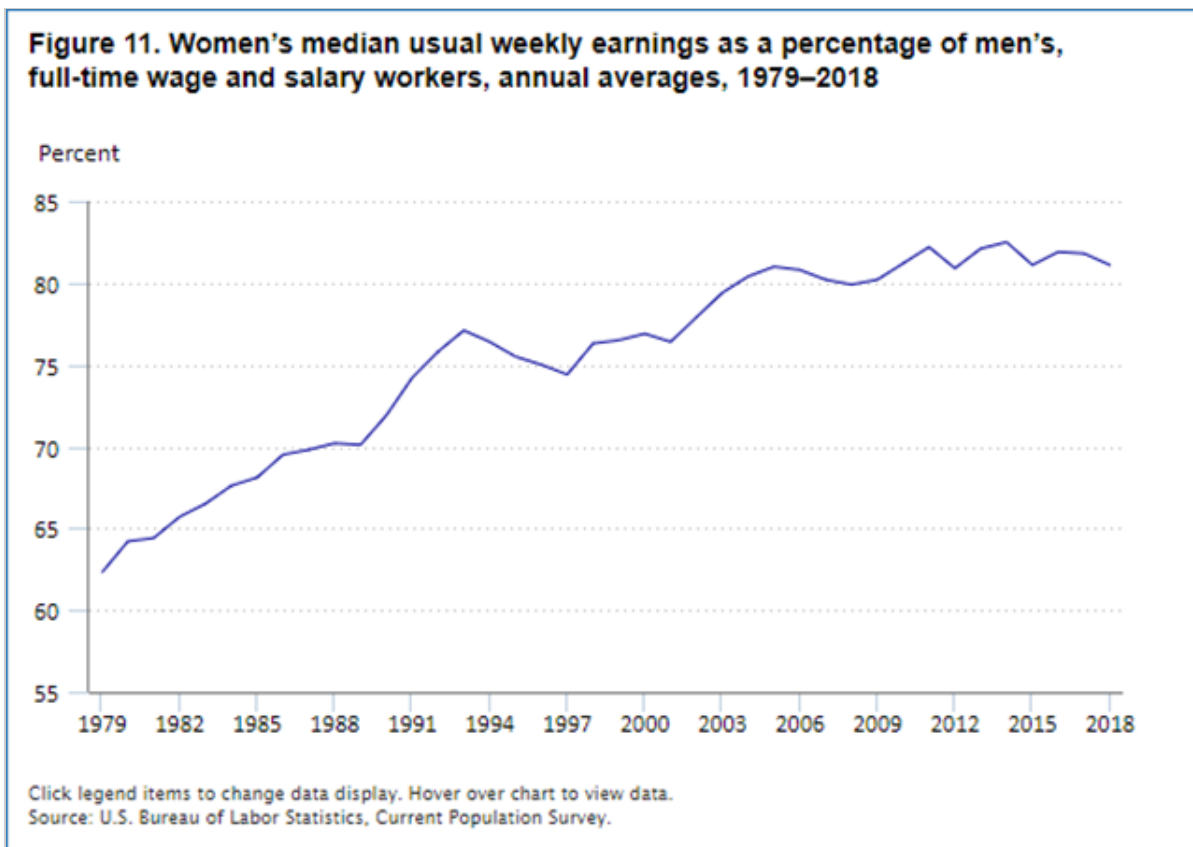
See footnotes at end of table.

Table 12. Median usual weekly earnings of full-time wage and salary workers by selected characteristics, annual averages, 2017–18

Characteristic	2017	2018	Percent change, 2017–18
Women	\$314	\$314	0.0
Current dollars			
Total, 16 years and older	\$860	\$886	3.0
CPI-U (1982–84 = 100)	245.12	251.11	2.4
Men	\$941	\$973	3.4
Women	\$770	\$789	2.5
White	\$890	\$916	2.9
Men	\$971	\$1,002	3.2
Women	\$795	\$817	2.8
Black or African American	\$682	\$694	1.8
Men	\$710	\$735	3.5
Women	\$657	\$654	-0.5
Asian	\$1,043	\$1,095	5.0
Men	\$1,207	\$1,241	2.8
Women	\$903	\$937	3.8
Hispanic or Latino ethnicity	\$655	\$680	3.8
Men	\$690	\$720	4.3
Women	\$603	\$617	2.3
Total, 25 years and older	\$907	\$932	2.8
Less than a high school diploma	\$520	\$553	6.3
High school graduate, no college	\$712	\$730	2.5
Some college or associate degree	\$798	\$826	3.5
Bachelor's degree and higher	\$1,279	\$1,324	3.5

Note: CPI-U = Consumer Price Index for All Urban Consumers.

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



In 2018, weekly earnings among the major race and ethnicity groups continued to be higher for Asians (\$1,095) and Whites (\$916) than weekly earnings for Blacks (\$694) and Hispanics (\$680). From 2017 to 2018, Asians had the largest increase in earnings at 5.0 percent. Earnings for Hispanics grew by 3.8 percent, and the earnings for Whites increased by 2.9 percent. Blacks experienced the smallest increase in earnings from 2017 to 2018, at 1.8 percent.

Educational attainment is strongly correlated with earnings. Among full-time wage and salary workers age 25 and older, usual weekly earnings rose for every educational attainment level from 2017 to 2018. Workers with a bachelor’s degree and higher had median weekly earnings of \$1,324 (up by 3.5 percent) in 2018. Those with some college or an associate degree had weekly earnings of \$826 (also up by 3.5 percent), and earnings for high school graduates (no college) were \$730 (up by 2.5 percent). Workers with less than a high school diploma had the lowest weekly earnings, at \$553, but had the largest percent gain in earnings from 2017 to 2018 (6.3 percent.)

As most economic indicators pointed to a strong labor market in 2018, one indicator that economists continued to watch closely during the year for signs of improvement was real-wage growth. As measured by the CPS, real median usual weekly earnings of full-time wage and salary workers (also referred to as constant dollar usual weekly earnings) increased by 0.6 percentage point from 2017 to 2018, compared with earnings that gained 1.2 percent from 2016 to 2017.

Summary

As the economy continued to expand in 2018, CPS data indicated that the labor market continued to strengthen. The national unemployment rate, one of the most closely watched labor market indicators, reached a 49-year low, declining to 3.8 percent in the third and fourth quarters of 2018. As employment growth outpaced population growth in 2018, the employment–population ratio rose in 2018, while the labor force participation rate changed little. Unemployment rates for most major demographic groups declined in 2018.

Other CPS measures used to gauge the health of the labor market also pointed to continued strength. All alternative measures of labor underutilization declined in 2018, and the number of long-term unemployed continued to decline in 2018. Median usual weekly earnings also increased from 2017 to 2018.

SUGGESTED CITATION

Andrew Blank and Roxanna Edwards, "Tight labor market continues in 2018 as the unemployment rate falls to a 49-year low," *Monthly Labor Review*, U.S. Bureau of Labor Statistics, May 2019, <https://doi.org/10.21916/mlr.2019.9>.

NOTES

¹ The National Bureau of Economic Research (NBER) is the official arbiter of the beginning and ending dates of recessions in the United States. According to the NBER, the most recent recession began in December 2007 and ended in June 2009. For the quarterly analysis in this article, any quarter containing a month identified as part of a recession by NBER is considered to be part of the recession. For example, the fourth quarter of 2007 through the second quarter of 2009 are identified as the most recent recession and are considered turning points. At the time this was written, NBER turning-point data indicate that only the economic expansion of the 1990s, which had 120 months of uninterrupted growth, lasted longer than the current economic expansion. For further analysis of the U.S. labor market during and a decade after the Great Recession, see Evan Cunningham, "Great Recession, great recovery? Trends from the Current Population Survey," *Monthly Labor Review*, April 2018, <https://doi.org/10.21916/mlr.2018.10>.

² The data presented in this article are based on information collected in the Current Population Survey (CPS), also called the household survey, which is a monthly sample survey of about 60,000 eligible households nationwide. The CPS reference week is generally the week that includes the 12th of the month. The U.S. Census Bureau conducts the survey for the U.S. Bureau of Labor Statistics (BLS).

³ The civilian noninstitutional population age 16 and older is the base population group in the CPS. The civilian noninstitutional population excludes Active Duty members of the U.S. Armed Forces, people confined to, or living in, institutions or facilities such as prisons or jails, and people in residential care facilities such as skilled nursing homes.

⁴ Although the CPS publishes monthly data, the data analyzed in this article are seasonally adjusted quarterly averages, and all over-the-year changes are comparisons of fourth-quarter data from 2017 with fourth-quarter data from 2018, unless otherwise noted.

⁵ Effective with the release of data for January 2018, the household survey used updated population estimates. Each year, the U.S. Census Bureau updates its population estimates to reflect new information and assumptions about the growth of the population during the decade. Following usual practice, BLS did not revise the official household survey estimates for December 2017 and earlier months. For additional information on the population adjustments and their effect on national labor force estimates, see "Adjustments to household survey population estimates in January 2018" (U.S. Bureau of Labor Statistics, February 2018), <https://www.bls.gov/cps/population-control-adjustments-2018.pdf>.

⁶ Data for Asians are not seasonally adjusted before 2010.

⁷ People whose ethnicity is identified as Hispanic or Latino may be of any race. In the CPS, about 90 percent of people of Hispanic or Latino ethnicity are classified as White.

[8](#) For additional information, see *Factors affecting the labor force participation of people ages 25 to 54* (Congressional Budget Office, February 2018), <https://www.cbo.gov/system/files?file=115th-congress-2017-2018/reports/53452-lfpr.pdf>.

[9](#) Educational attainment data are based on the highest degree received for people age 25 and older.

[10](#) In the CPS, veterans are men and women who have previously served on Active Duty in the U.S. Armed Forces and who were civilians at the time of data collection. Data are tabulated for people age 18 and older. Veterans are classified by their period of service: Gulf War era II (September 2001–present); Gulf War era I (August 1990–August 2001); World War II (December 1941–December 1946), Korean War (July 1950–January 1955), and the Vietnam era (August 1964–April 1975); and other service periods (all other periods). Veterans who served in more than one wartime period are classified in the most recent one. Veterans who served in both a wartime period and any other service period are classified in the wartime period. Effective with data for November 2017, estimates for veterans incorporate population controls derived from an updated Department of Veterans Affairs population model. In accordance with usual practice, BLS did not revise estimates for previous years. Information about the updated veteran population model is available from the Department of Veterans Affairs at https://www.va.gov/vetdata/docs/Demographics/New_Vetpop_Model/Vetpop16_Overview.pdf.

[11](#) Labor force statistics for people with and without a disability are available back to June 2008, the first month disability questions were added to the CPS.

[12](#) The foreign born are people who reside in the United States but were born outside the country or outside one of its outlying areas, such as Puerto Rico or Guam, to parents who were not U.S. citizens. The foreign born include legally admitted immigrants; refugees; temporary residents, such as students and temporary workers; and undocumented immigrants.

[13](#) The unemployed are classified by occupation according to their last job, which may or may not be similar to the job they are currently looking for.

[14](#) The measure “part time for economic reasons” is based on an individual’s actual hours at work during the survey reference week. An economic reason may include slack work, unfavorable business conditions, inability to find full-time work, or seasonal declines in demand. To be classified as involuntary part-time workers, people who usually work part time and worked part time during the survey reference week must indicate that they want and are available for full-time work. For more research on involuntary part-time workers; for example, see Jonathan L. Willis, “Stuck in part-time employment,” *The Macro Bulletin: Macroeconomic research from the Federal Reserve Bank of Kansas City* (Federal Reserve Bank of Kansas City, January 18, 2017), [https://www.kansascityfed.org/~media/files/publicat/research/macrobulletins/mb17willis0118.pdf](https://www.kansascityfed.org/~/media/files/publicat/research/macrobulletins/mb17willis0118.pdf) or Rob Valletta, “Involuntary part-time work: Yes, it’s here to stay,” *San Francisco Fed Blog* (Federal Reserve Bank of San Francisco, April 11, 2018), <https://www.frbsf.org/our-district/about/sf-fed-blog/involuntary-part-time-work-here-to-stay/>.

[15](#) For additional information, see Steven F. Hipple, “People who are not in the labor force: why aren’t they working?” *Beyond the Numbers*, vol. 5, no. 15, December 2015, <https://www.bls.gov/opub/btn/volume-4/people-who-are-not-in-the-labor-force-why-arent-they-working.htm>.

[16](#) Discouraged workers may indicate that no jobs are available for them; they lack education, training, or experience needed to find a job; or they believe they face some type of discrimination, such as being too young or too old.

[17](#) The alternative measures of labor underutilization are defined as follows: U-1 is people who are unemployed for 15 weeks or longer, as a percentage of the civilian labor force; U-2 is the number of people who lost their jobs or people who completed temporary jobs, as a percentage of the civilian labor force; U-3 is the total number of people who are unemployed, as a percentage of the civilian labor force (official unemployment rate); U-4 is the total number of people who are unemployed, plus discouraged workers, as a percentage of the civilian labor force plus discouraged workers; U-5 is the total number of people who are unemployed, plus discouraged workers, plus all other people marginally attached to the civilian labor force, as a percentage of the labor force plus all people marginally attached to the labor force; and U-6 is the total number of people who are unemployed, plus all people marginally attached to the labor force, plus the total employed part time for economic reasons, as a percentage of the labor force plus all people marginally attached to the civilian labor force. For further information, see Vernon Brundage, “Trends in unemployment and other labor market difficulties,” *Beyond the Numbers*, vol. 3, no. 25, November 2014, <https://www.bls.gov/opub/btn/volume-3/pdf/trends-in->

[unemployment-and-other-labor-market-difficulties.pdf](#); and Steven E. Haugen, “Measures of labor underutilization from the Current Population Survey,” Working Paper 424 (U.S. Bureau of Labor Statistics, March 2009), <https://www.bls.gov/osmr/research-papers/2009/pdf/ec090020.pdf>.

¹⁸ For additional information and analyses, see Harley Frazis, “Employed workers leaving the labor force: an analysis of recent trends,” *Monthly Labor Review*, May 2017, <https://doi.org/10.21916/mlr.2017.16>; Randy E. Ilg and Eleni Theodossiou, “Job search of the unemployed by duration of unemployment,” *Monthly Labor Review*, March 2012, pp. 41–49, <https://www.bls.gov/opub/mlr/2012/03/art3full.pdf>; and “Research series on labor force status flows from the Current Population Survey” is available at https://www.bls.gov/cps/cps_flows.htm.

¹⁹ The earnings comparisons are on a broad level and do not control for many factors that can be important in explaining earnings differences, such as job skills and responsibilities, work experience, and specialization. The CPS data on earnings represent earnings before taxes and other deductions, and they include any overtime pay, commissions, or tips typically received. Regarding multiple jobholders, only earnings received at their main job are included. Earnings reported nonweekly are converted to a weekly equivalent. The term “usual” reflects each survey respondent’s own understanding of the term. If the respondent asks for a definition of “usual,” interviewers are instructed to define the term as more than half the weeks worked during the past 4 or 5 months. Wage and salary workers are defined as those who receive wages, salaries, commissions, tips, payment in kind, or piece rates. This definition includes both public and private sector employees but excludes all self-employed people, regardless of whether their business is incorporated or unincorporated. Finally, full-time workers are those who usually work 35 hours or more per week at their main job.

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