

## Employment outlook: 2008–18

# The employment projections for 2008–18

*The employment structure of the U.S. economy in 2018 is expected to remain similar to that of 2008, although changes in shares of employment will result from continuing increases or declines among some occupations; in general, goods-producing sectors, excluding agriculture, will lose employment while service-providing sectors will expand*

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**T**his issue of the *Monthly Labor Review* marks the release of the 2008–18 employment projections of the Bureau of Labor Statistics (BLS). Four sets of projections are presented in separate articles on the labor force, the U.S. macroeconomy, industry output and employment, and occupational employment. These articles outline the assumptions and rationales underlying expected changes in the economy and present detailed results for each set of projections. For just the second time in the last 30 years, the base-year employment and output of the projections reflect an economy in a deep recession.<sup>1</sup> Among the major highlights of the 2008–18 projections are the following:

- Slowdowns in population, labor force, and productivity growth, among other factors, are expected to keep real gross domestic product (GDP) growth at 2.4 percent annually between 2008 and 2018, very close to the 2.5-percent growth seen in the previous decade.
- Annual employment growth of 1.0 percent is projected to add about 15.3 million new jobs to the economy by

2018, with total employment growing from 150.9 million to 166.2 million.

- The professional and business services sector and the health care and social assistance sector are anticipated to grow at more than twice the annual average of 1.0 percent for all industries, adding the most employment, 4.2 million and 4.0 million, respectively.
- Nearly two-thirds of the 30 occupations with the largest expected numerical increase have short-, moderate-, or long-term on-the-job training as their most significant source of education or training.

The BLS started developing long-term employment projections nearly 60 years ago, soon after World War II ended, to provide career information to veterans reentering the civilian workforce. Today, the customer base for the BLS projections has widened considerably and includes high school and college students, adult jobseekers and career changers, career development specialists, guidance counselors, other Federal agencies, and academic and other researchers. State workforce agencies use the BLS national projections as their starting point for preparing State and local area industry and occupational employment projections.

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The time horizon for the projections is 10 years, and the projections are updated every other year.

The first section of this article focuses on how the recession affected the development and results of the 2008–18 projections. Next, a summary of the labor force projections is presented, followed by a brief overview of the macroeconomic projections. The labor force and macroeconomic assumptions and projections provide the foundation and context for the projections of industry output and employment and occupational employment. Finally, the article concludes with some highlights of these projections.

### Impact of the recession on the projections

The National Bureau of Economic Research (NBER) declared December 2007 as the peak of a 73-month economic expansion and also the beginning of a recession. Throughout 2008, the Nation's economic activity contracted across most industrial sectors, as evidenced by declines in domestic production and employment; these declines, in turn, affected real income and other economic indicators. The unemployment rate stood at 7.2 percent in December 2008, reflecting a loss of more than 3 million jobs during the previous year. Because 2008 employment is used as the base-year employment in these *Review* articles, questions have naturally arisen among BLS data users about how to interpret the recession's impact on the development of the 2008–18 projections, especially inasmuch as job losses continued as the Agency finalized its projections in mid-2009.

To understand the impact of the recession, it is necessary to understand the basics of the BLS projection process. In developing long-run projections, the focus is on long-run trends, including trends in population, labor force, productivity, and output growth. The population and the labor force have been aging, their growth rates slowing. These long-run trends are expected to continue, regardless of the fluctuations in the economy.

The BLS uses a macroeconomic model of the U.S. economy provided by Macroeconomics Advisers, LLC, to derive measures of output growth. The model solves a system of 543 equations for output through equilibration of supply and demand, with the labor force as the primary constraint on the supply side. The demand side is manifested as the following components of GDP: personal consumption, business investment, government spending, and net foreign trade flows.

The macromodel solves its equations on the basis of long-run behavioral relationships and certain key

assumptions. Two assumptions in particular are especially important to the ensuing discussion: that the U.S. economy will return to the long-run trend growth path by 2018 and therefore will be at full employment at that time, and that no other events or “shocks” will occur that would precipitate an economic downturn, or recession. Examples of such shocks are the oil crises of the early 1970s and 1980s, the collapse of the dot-com bubble in the early 2000s, and the severe losses in the financial and real estate markets in the latest recession. Because shocks and recessions are difficult to predict, the default assumption is a labor market in a state of equilibrium, in which labor demand and supply are equal and unemployment is frictional, not a consequence of a recession-induced decrease in demand.

Thus, although the base-year output and employment measures of the current projections are at a low point relative to previous years, the target-year measures are based on a full-employment economy. To illustrate what the projections might have looked like before the recession led to job losses, table 1 includes 2007 data from before the recession, together with the resultant 2007–18 growth rates, compared with the 2008 employment and 2008–18 growth rates, for major industry sectors. Differences are most noticeable in construction, manufacturing, and financial activities—sectors that lost the most jobs relative to their size.

Because the economy is expected to emerge from the recession and return to full employment over the 10-year projection period, the current projections indicate faster growth rates and more numerous openings than might have been expected in several industries had employment not fallen in 2008. It is important to note, however, that the already palpable impacts of the recession compelled BLS staff to account for expected long-range changes to several GDP sectors, as well as revise assumptions regarding some exogenous variables. Some of these changes and assumptions have to do with personal consumption expenditures and government consumption and investment as shares of GDP, and changes in the Federal deficit and the personal savings rate. The revised assumptions and projections affected the final results pertaining to the composition and growth of GDP, which in turn affected the industry and occupational projections. Although these macroeconomic impacts are less palpable than the data in table 1 show, they are, nevertheless, factors in generating the final employment levels.<sup>2</sup>

### Overview of the 2008–18 projections

*Projection methods.* The BLS uses a series of separate, yet interrelated, procedures to develop projections for the labor force, the aggregate economy, industry output and employ-

**Table 1. Nonfarm wage and salary employment, by major industry, 2007, 2008, and projected 2018**

Industry sector	Employment <sup>1</sup>			Numerical change		Average annual rate of change	
	2007	2008	2018	2007–18	2008–18	2007–18	2008–18
Total.....	138,352.2	137,814.8	152,443.5	14,091.3	14,628.7	0.9	1.0
Goods producing, excluding							
agriculture .....	22,173.2	21,363.1	21,390.4	-782.8	27.3	-.3	.0
Mining .....	663.9	717.0	613.2	-50.7	-103.8	-.7	-1.6
Construction .....	7,630.0	7,214.9	8,552.0	922.0	1,337.1	1.0	1.7
Manufacturing .....	13,879.3	13,431.2	12,225.2	-1,654.1	-1,206.0	-1.1	-.9
Service providing .....	116,179.0	116,451.7	131,053.1	14,874.1	14,601.4	1.1	1.2
Utilities .....	553.4	559.5	500.5	-52.9	-59.0	-.9	-1.1
Wholesale trade .....	6,015.3	5,963.9	6,219.8	204.5	255.9	.3	.4
Retail trade .....	15,520.1	15,356.4	16,010.4	490.3	654.0	.3	.4
Transportation and warehousing .....	4,541.0	4,504.9	4,950.4	409.4	445.5	.8	.9
Information .....	3,031.8	2,996.9	3,115.0	83.2	118.1	.2	.4
Financial activities .....	8,301.4	8,145.5	8,702.7	401.3	557.2	.4	.7
Professional and business services .....	17,942.2	17,778.0	21,967.9	4,025.7	4,189.9	1.9	2.1
Educational services .....	2,941.4	3,036.5	3,842.0	900.6	805.5	2.5	2.4
Health care and social assistance.....	15,380.3	15,818.7	19,815.6	4,435.3	3,996.9	2.3	2.3
Leisure and hospitality .....	13,426.7	13,458.7	14,601.1	1,174.4	1,142.4	.8	.8
Other services <sup>2</sup> .....	6,307.1	6,333.2	7,141.9	834.8	808.7	1.1	1.2
Federal Government .....	2,734.0	2,764.3	2,859.1	125.1	94.8	.4	.3
State and local government .....	19,484.3	19,735.2	21,326.7	1,842.4	1,591.5	.8	.8

<sup>1</sup> Includes nonfarm wage and salary data from the Current Employment Statistics survey and data on private households

from the Current Population Survey.

<sup>2</sup> Includes data on private households from the Current Population Survey.

ment, and occupational employment.<sup>3</sup> In brief, the labor force projections begin with the Census Bureau's latest population projections by age, sex, race, and ethnic origin. Projected labor force participation rates for 136 combinations of these groups are then developed by analyzing past trends, with some modifications based on expected demographic changes, such as an influx of immigrants with lower median ages. To obtain estimates of the labor force in 2018, projected labor force participation rates are multiplied by the Census Bureau's population projections.

The labor force projections are then used as inputs to the aggregate economic projection process. As already mentioned, the BLS uses the Macroeconomic Advisers econometric model of the U.S. economy to derive estimates of the components of GDP. These estimates are then disaggregated into commodity-level demand, which is then applied to an input-output model to derive output by industry. Next, industry-level employment is determined on the basis of projected industry output and expectations of productivity growth.

Projections of detailed industry employment are then used as part of the process of projecting occupational em-

ployment. An industry-occupation matrix—also called the National Employment Matrix—is used to develop detailed occupational employment by industry. The BLS projects changes in occupational shares of industries to account for technological changes, shifts in product mix, and other factors. These new staffing patterns are then applied to projected industry employment to yield estimates of occupational employment in 2018.

*Labor force highlights.* Mitra Toossi's article, "Labor force projections to 2018: older workers staying more active," presents new labor force projections that form the starting point for the BLS macroeconomic, industry, and occupational projections. Toossi uses Census Bureau projections of the resident U.S. population<sup>4</sup> as the basis for projecting labor force participation rates.

Population growth, which is driven by fertility rates, life expectancy, and net migration, is expected to slow from an annual average growth rate of 1.3 percent in 1998–2008 to 1.0 percent over the next 10 years, despite an expected increase in the number of immigrants in the population. This slower growth will, in part, affect labor force growth, which is expected to slow from its 1.1-percent rate be-

tween 1998 and 2008 to 0.8 percent in the coming decade. A shrinking overall labor force participation rate, falling from 66.0 percent in 2008 to 64.5 percent in 2018, also will contribute to slower labor force growth. Changes in the labor force participation rate will be driven by several factors, including the following:

- the aging of the population, as the large baby-boom generation, born between 1946 and 1964, moves into age groups that have traditionally lower labor force participation rates;
- the relatively small size of the baby-bust cohort (those born between 1965 and 1975), whose members will fall into the 25- to 54-years age group—the group with the traditionally highest labor force participation rates—during 2008–18; and
- the continuation of recent trends showing lower labor force participation rates for the youngest working-age groups.

Sharply increased immigration to the United States is expected to mitigate the projected labor force slowdown caused by the preceding factors, but also will continue to change the racial and ethnic composition of the labor force. Hispanics, accounting for 14.3 percent of the labor force in 2008, are expected to increase their share to 17.6 percent by 2018. Other minority groups—including Blacks and Asians—also will increase their share of the labor force, while White non-Hispanics become an increasingly smaller segment. (See table 2.)

*Macroeconomy highlights.* The article by Ian Wyatt and Kathryn Byun, “The U.S. economy to 2018: from recession to recovery,” examines the 2008–18 macroeconomic projections. The authors describe an economy returning to a path of long-run trend growth, with yearly average GDP growth projected at 2.4 percent. This growth rate represents a slowdown from both 1998–2008, when GDP increased at a 2.5-percent annual rate, and 1988–98, when it rose at a 3.0-percent annual rate. The primary factors constraining faster GDP growth are the expected slowing of both labor force and productivity growth.

Productivity is expected to grow at an annual rate of 1.8 percent between 2008 and 2018, slower than the 2.6-percent growth seen in 1998–2008 and nearer to the growth rates of 1988–98. As reported in the Toossi article, the labor force is expected to increase by 12.6 million, which is 3.4 million less than the increase from 1988 to 1998

and 4.0 million less than that during 1998–2008.

The components of GDP are expected to retain their relative shares until 2018. Personal consumption expenditures account for the largest segment—about 70.5 percent in 2008—of nominal GDP. This share is expected to decrease slightly, to 70.2 percent, in 2018. Gross private domestic investment is the next-largest component, followed by exports, State and local government expenditures and investment, and Federal Government expenditures and investment.

In terms of real dollars, personal consumption expenditures are expected to grow, but at a slower rate than in the past two decades, as easy credit becomes less available than in the past because of growing consumer debt and as many consumers, especially older ones on the verge of or in retirement, develop more risk-averse spending patterns. Demand for nonresidential private investment will drive growth similar to that seen from 1998 to 2008—growth spurred by purchases of computer equipment and software. Residential investment is expected to return to its long-run trend level by 2018 to accommodate changing demographics. Gross private investment, including nonresidential and residential investment, is projected to increase its nominal share of GDP from 14.0 percent in 2008 to 15.7 percent in 2018. Personal consumption expenditures are expected to grow more slowly between 2008 and 2018 than they did between 1998 and 2008, as well as in comparison to some other components of GDP; therefore, their contribution to the percent change in real GDP is expected to fall from 2.1 percent to 1.8 percent over the next decade. Nevertheless, personal consumption expenditures will remain the largest contributor to GDP.

Federal spending is expected to slow down for both defense and nondefense consumption and gross investment. Defense expenditures accounted for the lion’s share—more than two-thirds—of all Federal spending in 2008, and this share is expected to increase to nearly 70 percent by 2018 as defense expenditures continue to outpace nondefense expenditures. In total, Federal expenditures accounted for 7.5 percent of nominal GDP in 2008, a share that is anticipated to decrease to 7.0 percent in 2018.

International trade is expected to grow more quickly than GDP as a whole, with import growth outpacing export growth. Indeed, the nominal trade imbalance is expected to almost double from \$669 billion in 2008 to \$1.2 trillion in 2018.

*Industry output and employment.* The next article in the projection series is “Industry output and employment

**Table 2. Civilian labor force, by age, sex, race, and ethnicity, 1988, 1998, 2008, and projected 2018**

[Numbers in thousands]

Group	Level				Change			Percent change			Percent distribution				Annual growth rate [percent]		
	1988	1998	2008	2018	1988–98	1998–2008	2008–18	1988–98	1998–2008	2008–18	1988	1998	2008	2018	1988–98	1998–2008	2008–18
Age, years:																	
16 to 24.....	22,536	21,894	22,032	21,131	-642	138	-901	-2.8	0.6	-4.1	18.5	15.9	14.3	12.7	-0.3	0.1	-0.4
25 to 54.....	84,041	98,718	104,396	105,944	14,677	5,678	1,548	17.5	5.8	1.5	69.1	71.7	67.7	63.5	1.6	.6	.1
55 and older...	15,092	17,062	27,858	39,836	1,970	10,796	11,978	13.1	63.3	43.0	12.4	12.4	18.1	23.9	1.2	5.0	3.6
Race:																	
White .....	104,756	115,415	125,635	132,490	10,659	10,220	6,855	10.2	8.9	5.5	86.1	83.8	81.4	79.4	1.0	.9	.5
Black.....	13,205	15,982	17,740	20,244	2,777	1,758	2,504	21.0	11.0	14.1	10.9	11.6	11.5	12.1	1.9	1.0	1.3
Asian .....	3,718	6,287	7,202	9,345	2,560	924	2,143	68.9	14.7	29.8	3.1	4.6	4.7	5.6	5.4	1.4	2.6
All other groups <sup>1</sup> .....	-	-	3,710	4,832	-	-	1,122	-	-	30.2	-	-	2.4	2.9	-	-	2.7
Ethnicity:																	
Hispanic origin .....	8,982	14,317	22,024	29,304	5,335	7,707	7,280	59.4	53.8	33.1	7.4	10.4	14.3	17.6	4.8	4.4	2.9
Other than Hispanic origin .....	112,687	123,356	132,263	137,607	10,669	8,907	5,344	9.5	7.2	4.0	92.6	89.6	85.7	82.4	.9	.7	.4
White non-Hispanic .....	96,141	101,767	105,210	106,834	5,626	3,443	1,624	5.9	3.4	1.5	79.0	73.9	68.2	64.0	.6	.3	.2

<sup>1</sup> The "All other groups" category includes (1) those classified as being of multiple racial origin and (2) the race categories of (2a) American Indian

and Alaska Native and (2b) Native Hawaiian and Other Pacific Islanders. Dash indicates no data collected for category.

projections to 2018," by Rose Woods. Various macroeconomic assumptions and projections translate into final demand for commodities and total industry production, which together determine industry employment levels. Woods outlines projected output and employment growth and levels at the major industry sector, as well as at the detailed industry level.

The economy comprises 17 major industry sectors, the majority of which provide services. Major industry service sectors include information, financial activities, health care and social assistance, and government, for example. In total, all service sector industries accounted for 84 percent of wage and salary jobs in 2008. The remaining major sectors—mining, construction, manufacturing, and agriculture—produce goods. More than 90 percent of the 151 million jobs in the economy in 2008 were filled by wage and salary workers, with the remainder performed by self-employed or unpaid family workers. Although output is expected to grow in both the goods-producing and the service-providing sectors, only the service sector will see substantial employment gains at the aggregate level.

*Output.* Total output<sup>5</sup> is expected to increase by 2.8 per-

cent, on average, each year during 2008–18, faster than the 2.1-percent rate posted in the previous decade. In nominal terms, the service-providing sectors accounted for more than two-thirds of total output in 2008. That share is expected to increase to nearly 73 percent by 2018. Growth in the service sector is driven by increasing demand for information, wholesale and retail trade, health care and social assistance, and professional and business services.

The push to keep businesses competitive and profitable will increase demand for services within professional and business services. Management, scientific, and technical consulting services; computer systems design and related services; and employment services are needed to develop and implement new technologies, ensure compliance with government regulations, provide computer security, and develop, improve, and maintain computer networks. The need to accommodate an aging population will spur demand for health care and social assistance. Strong increases in output in offices of health practitioners, home health care services, and other health care and social assistance industries reflect changing demographics and increasing life expectancies.

Output growth—averaging 2.0 percent per year—for goods-producing industries is expected to lag the 3.1-percent growth of service-providing industries. Among the goods-producing industries, construction is expected to have the fastest output growth, an average annual rate of 2.9 percent during 2008–18, spurred primarily by investment in residential construction. The manufacturing share of total nominal output will continue to diminish as demand for services in other sectors strengthens. However, manufacturing still will continue to account for the largest share of output of the goods-producing sector, as well as of the total economy.

*Employment.* The Nation's employment is expected to increase from 150.9 million to 166.2 million over the coming decade, adding 15.3 million jobs. This average annual growth rate of 1.0 percent is slightly faster than the 0.7 percent seen between 1998 and 2008, largely because 2008 was a recession year during which employment in several sectors that, historically, had been growing actually declined. Nearly all of the 15.3 million job increase will be in the service-providing sector, led by gains in professional and business services and in health care and social assistance, which are projected to contribute a combined 8.2 million new jobs, more than half of all new jobs created in the Nation. State and local government (which includes public hospitals and schools) and leisure and hospitality also will generate numerous jobs. These four sectors are among those exhibiting the fastest job growth.

Employment in the goods-producing sector, by contrast, will add only 27,300 net jobs over the 2008–18 period, with only one sector—construction—expected to expand. Although demand for output in the goods-producing sector continues to grow, many of these industries are affected by labor-saving equipment and processes. Construction is the notable exception and is expected to recover its job losses from the recession and return to its former growth trend, ultimately adding 1.3 million jobs over the 2008–18 period.

The job gains in construction, however, will be largely offset by losses in manufacturing, mining, and agriculture. Manufacturing will continue its long-run decline, but at a slower pace than during 1998–2008. Businesses will continue to realize efficiencies by automating more production processes and streamlining their use of labor. Some industries are expected to decline because more production is taking place overseas and because import competition will reduce demand for many products manufactured in the United States. Among declining industries will be those in the textile, apparel, footwear, and leather and al-

lied product subsectors, whose products are anticipated to face stiff competition from foreign manufacturers.

*Occupational employment.* Trends in occupational employment are pushed by, among other factors, demand for various products and services and the resultant industry employment change. Employment of many, if not most, occupations is expected to change concomitantly with changes in the industries in which they are concentrated. However, changes in technology, productivity, and business practices, as well as changes in the mix of demand for goods and services, may affect occupational employment disproportionately, causing some occupations to grow or decline faster than their employing industries. One example is data entry keyers, whose employment over the last few decades shrank both in numerical terms and relative to other occupations in the information industry, as the growing use of automated data entry systems obviated the need for these workers. Changing occupational demand, in turn, leads to changes in education and training requirements.

The final article in this issue of the *Review*, “Occupational employment projections to 2018,” by Alan Lacey and Benjamin Wright, presents the employment outlook by occupational group, as well as for 750 detailed occupations; discusses sources of job openings other than economic growth; and describes the education and training requirements for new and existing jobs in the economy.

Occupations, like industries, are categorized into groups for analysis and reporting purposes. BLS occupational projections data are categorized into 10 groups based on the Standard Occupational Classification Manual. (See table 3.) In 2008, the occupational groups with the largest employment were professional and related occupations and service occupations. Because of their large size, as well as their relatively fast growth rates—16.8 percent and 13.8 percent, respectively, compared with the 10.1-percent<sup>6</sup> growth for all occupations over the projection decade—professional and related occupations and service occupations together are expected to add 9.3 million of the 15.3 million new jobs created throughout the economy during the next 10 years—and both occupational groups will see their shares of overall employment increase. At the opposite end of the employment spectrum are farming, fishing, and forestry; and production occupations, both of which are expected to lose jobs over the projection decade.

Some of the fastest growing occupations in the service and professional and related groups are found within fast-growing industries: home health aides work in the 4th-

**Table 3. Employment, by occupational group, 2008 and projected 2018**

[Numbers in thousands]

Occupational group	Employment		Percent distribution		Change, 2008–18	
	2008	2018	2008	2018	Number	Percent
Total, all occupations .....	150,931.7	166,205.6	100.0	100.0	15,273.9	10.1
Management, business, and financial occupations .....	15,746.7	17,410.9	10.4	10.5	1,664.2	10.6
Professional and related occupations ....	31,053.5	36,280.0	20.6	21.8	5,226.5	16.8
Service occupations .....	29,575.9	33,645.1	19.6	20.2	4,069.2	13.8
Sales and related occupations .....	15,902.7	16,883.1	10.5	10.2	980.4	6.2
Office and administrative support occupations .....	24,100.6	25,942.7	16.0	15.6	1,842.1	7.6
Farming, fishing, and forestry occupations .....	1,035.4	1,026.3	.7	.6	-9.1	-.9
Construction and extraction occupations .....	7,810.3	8,828.8	5.2	5.3	1,018.6	13.0
Installation, maintenance, and repair occupations .....	5,798.0	6,238.2	3.8	3.8	440.2	7.6
Production occupations .....	10,083.0	9,733.9	6.7	5.9	-349.2	-3.5
Transportation and material-moving occupations .....	9,825.5	10,216.6	6.5	6.1	391.1	4.0

fastest-growing home health care services industry; physician assistants, physical therapist aides, dental hygienists, dental assistants, medical assistants, and occupational therapist aides are in the 9th-fastest-growing offices of health practitioners; and network systems and data communications analysts and computer software engineers are concentrated in the data processing, hosting, related services, and other information services industry and in the computer systems design industry, both of which are projected to be among the top 10 fastest growing industries. Employment declines in other occupations, such as farmers and ranchers and sewing machine operators, are similarly affected by the direction of employment change in the agriculture and manufacturing industries.

Numerous occupations are projected to grow faster than the 10.1-percent average for all occupations over the 2008–18 decade, adding hundreds of thousands of new jobs by virtue of their large size in 2008. Among these occupations are registered nurses (adding 581,500 jobs), home health aides (460,900 jobs), and personal and home care aides (375,800 jobs). In addition, many occupations with average or slower-than-average growth still will contribute a good number of new jobs because of their employment size: retail salespersons (374,700 jobs), book-keeping, accounting, and auditing clerks (212,400 jobs), and waiters and waitresses (151,600 jobs).

Thus far, discussions of job opportunities have been limited to those resulting from growth in the economy. However, Lacey and Wright point out that a much larger source

of job openings during the coming decade will result from the need to replace workers who retire or move to different occupations. In fact, replacement needs are expected to account for 34.3 million openings, more than twice as many as the 15.3 million due to economic growth. The importance of factoring in replacement openings when calculating employment opportunities can be illustrated by examining cashiers, an occupation that employed nearly 3.6 million in 2008. Job growth among cashiers is projected to be slower than average, generating only 123,200 openings. However, because the workers generally are younger than average and have low attachment to this occupation, the need to replace those who move on to other occupations is anticipated to create an additional 1.6 million openings.

Finally, Lacey and Wright describe the education or training typically needed to qualify for entry into various occupations over the projection period. They show that, among the 30 fastest growing occupations, nearly half belong to the professional and related group and have a bachelor's degree or higher as their most significant source of training. Most of the top 30 occupations with the largest job growth, however, fall into service, office and administrative support, and other major groups that have fewer education or training requirements; short- or moderate-term on-the-job training is sufficient for many of these large occupations. Thus, even though occupations requiring higher education levels are growing quickly, those occupations requiring no postsecondary training will continue to make up the larger part of the workforce.

THE BLS PROJECTS THE EMPLOYMENT STRUCTURE of the U.S. economy in 2018 to remain similar to that in 2008, but several major industry sectors will continue their historical employment increases or declines over the 2008–18 period, leading to changes in the percent distribution of industries. At the aggregate level, goods-producing sectors, excluding agriculture, will lose employment, dropping from 14.2 percent of total employment in 2008 to an expected 12.9 percent in 2018, while service-providing sectors will expand their employment, growing from 77.2 percent of total employment in 2008 to an anticipated 78.8 percent in 2018. Driving this increase is the strong

growth of professional and business services, educational services, and health care and social assistance. Construction also will grow, but declines in manufacturing will nearly offset the growth. At the detailed occupation level, changing demographics—particularly the aging population and labor force—and competitive pressures will grow the demand for health care workers, computer specialists, and others. Many of these occupations require high levels of education or training. However, jobs for workers with a variety of skills, education, and training will be available between 2008 and 2018. □

## Notes

<sup>1</sup> Although the recessions of 1980 and 1990 also occurred during BLS projection base years, those recessions were considered milder—of shorter duration, with lower drops in gross domestic product (GDP), and with relatively lower unemployment rates—than the recession of 1981–82 and the recession beginning in 2007.

<sup>2</sup> For additional information on how the recession influenced the development of the macroeconomic projections, see Ian D. Wyatt and Kathryn J. Byun, “The U.S. economy to 2018: from recession to recovery,” this issue, pp. 11–29.

<sup>3</sup> Detailed descriptions of the projection methodology for each of these stages are found at the BLS Web site, on the Internet at [www.bls.gov/emp/ep\\_tech\\_documentation.htm](http://www.bls.gov/emp/ep_tech_documentation.htm).

<sup>4</sup> The Census Bureau develops projections of various demographic characteristics of the resident U.S. population, including the institutionalized, those in the Armed Forces, immigrants, and children. The BLS then lowers the Census Bureau’s population projections by subtracting people in the Armed Forces, residents of institutions, and all children under the age of 16, to be consistent with the conceptual definition used in other BLS data sets.

<sup>5</sup> Total output is gross duplicated output, which includes intermediate demand. (See Woods, “Industry output and employment projections to 2018,” this issue, pp. 52–81.)

<sup>6</sup> Rates of change over the 10-year projection period are used in discussing occupational employment, rather than the annual average rates of change used in discussing industry employment.