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Employment outlook: 2008–18

Occupational employment projections to 2018

Professional and related occupations and service occupations are expected to create more new jobs than all other occupational groups from 2008 to 2018; in addition, growth will be faster among occupations for which postsecondary education is the most significant form of education or training, and, across all occupations, replacement needs will create many more job openings than will job growth

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The Bureau of Labor Statistics publishes long-term occupational employment projections every 2 years. Various factors affect occupational employment levels over time, including population and industry growth, technological advances, and changes in consumer demand. Total employment, a measure of all jobs in the U.S. economy, is projected to increase by 15.3 million over the 2008–18 period, representing a growth rate of 10.1 percent.¹ Among occupational groups, strong employment growth is expected in healthcare occupations and in computer-related occupations, whereas employment in production occupations as well as farming, fishing, and forestry occupations is expected to decline.

The first section of this article provides a brief overview of the BLS projections, including expectations for growth in the population, in the labor force, and in Gross Domestic Product (GDP). These factors, among others, influence occupational employment and provide context for the occupational projections. The second section of the article details employment projections for occupational groups and gives an overview of broad trends across these groups. The third section discusses education and training and how they relate to the projections, and includes statistics on employment change, job

openings, and wages by education or training category. The fourth section details the projections for noteworthy individual occupations, including the occupations with the fastest projected rates of growth, those with the largest projected growth in numerical terms, and those with the greatest projected declines in numerical terms. The last section of this article provides information on job openings and on projected replacement needs, which refers to the demand that results when workers permanently leave an occupation.

Overview of BLS projections

BLS publishes projections for a range of economic factors, including, but not limited to, the size and makeup of the labor force, the size of the economy, industry employment and output, and occupational employment. The occupational employment projections, the focus of this article, are partially dependent on expectations for the other aforementioned economic factors.

Over the 2008–18 projection period, the U.S. population will continue to experience significant demographic changes.² Whereas the number of people aged 16–54 is expected to increase more slowly than during the previous decade, the 55-and-older population is

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expected to match its previous rate of growth, increasing by almost 21 million. As a result, the 55-and-older group will account for a larger share of the total population. Because the 55-and-older age group has a substantially lower labor force participation rate than the younger group, the labor force is expected to increase by only 12.6 million individuals from 2008 to 2018. This average annual rate of growth of 0.8 percent will be considerably slower than the 1.1-percent annual rate seen over the previous decade.

Changes in the population and labor force, along with other factors, affect the size of the economy, as well as the demand for goods and services. Real GDP is expected to increase at an average annual rate of 2.4 percent from 2008 to 2018, only slightly slower than the 2.5-percent annual rate seen over the previous 10 years.³ BLS projects that several factors, such as slower growth in the labor force, a slower rate of growth in personal consumption expenditures, a higher savings rate, and a continued trade deficit will put downward pressure on GDP growth. However, relatively strong productivity growth, a rebound in the housing market, and continued demand for medical services will help to keep GDP growth at a rate similar to that of the previous decade.

On the basis of the expectations concerning population, labor force, and GDP growth, total employment growth is projected to be relatively slow. The projected 10.1-percent rate of employment growth can be attributed, in large part, to the anticipated slow growth of the labor force. Projected employment growth is higher than would otherwise be expected, however, as a result of the recession that began in December 2007. The analysis underlying BLS employment projections uses currently available information to focus on long-term structural changes in the economy. The 2008–18 projections assume a full-employment economy in 2018.⁴ The impact of the most recent recession on the long-term structure of the economy will not be fully known until some point during or after the recovery. Because the 2008 starting point is a recession year, the projected growth to an assumed full-employment economy in 2018 will generally be stronger than if the starting point were not a recession year. This effect can have an impact on total employment, as well as on employment levels of individual occupational groups such as production occupations and construction and extraction occupations, both of which are largely in industries that were heavily affected by the recession.

Changes in U.S. demographics, as well as a dynamic business environment, will have implications for the demand for certain types of workers. As the 55-and-older age group accounts for a larger portion of the population,

the demand for medical care will increase rapidly, leading to strong employment growth in healthcare and related occupations. In addition, as the U.S. business environment becomes increasingly competitive and organizations strive to increase efficiency and reduce costs through the use of information technology, computer and mathematical science occupations will see strong employment growth.

Total employment can be divided into two main segments: wage and salary workers, who work for other individuals or establishments, and the self-employed, who work for themselves. In 2008, approximately 9 of every 10 jobs were held by wage and salary workers, the remainder being held by the self-employed. Whereas wage and salary employment is expected to grow by 10.5 percent, increasing from 139.2 million to 153.8 million jobs, self-employment is projected to increase 5.5 percent over the 2008–18 decade, from 11.7 million to 12.4 million jobs.

Occupational groups

Employment change in occupational groups can point to broad trends in the economy. For example, as a result of changing demographics, demand for healthcare services is expected to increase rapidly, leading to strong employment growth in the occupational groups that provide such services. BLS publishes projections for 750 detailed occupations that are classified into 10 occupational groups.⁵ (See table 1.) Among these groups, employment growth will vary considerably over the 2008–18 projection period. It is expected that the most rapid growth, estimated at 16.8 percent, will occur among professional and related occupations, while production occupations will see the fastest rate of decline, decreasing by 3.5 percent. Professional and related occupations are projected to add the largest number of new jobs—more than 5.2 million—whereas production occupations are expected to lose approximately 349,200.

Management, business, and financial occupations. The employment of management, business, and financial occupations is expected to increase by 10.6 percent, resulting in 1.7 million new jobs over the 2008–18 projection period. The workers in these occupations will be needed to help organizations navigate the increasingly complex and competitive business environment. Much of the projected growth will be in the fast-growing management, scientific, and technical consulting industry group. A substantial number of net jobs gains are expected in several large or rapidly growing sectors as well, including government, health care and social assistance, finance and insurance, and construction.

Table 1. Employment by occupational group, 2008 and projected 2018

(Numbers in thousands)

Code	2008 National Employment Matrix code and title	Employment		Percent distribution		Change, 2008–18	
		2008	2018	2008	2018	Numeric	Percent
00–0000	Total, all occupations.....	150,931.7	166,205.6	100.0	100.0	15,273.9	10.1
11–1300	Management, business, and financial occupations ¹	15,746.7	17,410.9	10.4	10.5	1,664.2	10.6
15–2900	Professional and related occupations ²	31,053.5	36,280.0	20.6	21.8	5,226.5	16.8
31–3900	Service occupations ³	29,575.9	33,645.1	19.6	20.2	4,069.2	13.8
41–0000	Sales and related occupations.....	15,902.7	16,883.1	10.5	10.2	980.4	6.2
43–0000	Office and administrative support occupation.....	24,100.6	25,942.7	16.0	15.6	1,842.1	7.6
45–0000	Farming, fishing, and forestry occupations.....	1,035.4	1,026.3	.7	.6	–9.1	–.9
47–0000	Construction and extraction occupations.....	7,810.3	8,828.8	5.2	5.3	1,018.6	13.0
49–0000	Installation, maintenance, and repair occupations.....	5,798.0	6,238.2	3.8	3.8	440.2	7.6
51–0000	Production occupations.....	10,083.0	9,733.9	6.7	5.9	–349.2	–3.5
53–0000	Transportation and material moving occupations.....	9,825.5	10,216.6	6.5	6.1	391.1	4.0

¹ Major occupational groups 11–0000 through 13–0000 in the 2000 Standard Occupational Classification (SOC).

² Major occupational groups 15–0000 through 29–0000 in the 2000 Stan-

dard Occupational Classification (SOC).

³ Major Occupational groups 31–0000 through 39–0000 in the 2000 Standard Occupational Classification (SOC).

Employment in business and financial operations occupations, an occupational group within the management, business, and financial group, is projected to grow by 17.7 percent, resulting in 1.2 million new jobs. Increasing financial regulations and the need for greater accountability will drive demand for accountants and auditors, an occupation that is expected to add roughly 279,400 jobs from 2008 to 2018. In addition, an increasingly competitive business environment will result in greater demand for management analysts, an occupation that is anticipated to add 178,300 jobs. It estimated that, together, these two occupations will account for almost 4 in 10 new business and financial operations jobs.

Employment in management occupations, by contrast, is projected to grow more slowly, increasing by 5.1 percent, or 454,300 new jobs. This slow growth is, in part, the result of projected declines in two occupations: general and operations managers, the largest management occupation, is expected to decrease by about 0.1 percent, and farmers and ranchers, the second largest, is projected to decline by 8.0 percent. Aside from these two occupations, employment in all other management occupations combined is expected to increase by 8.2 percent from 2008 to 2018.

Professional and related occupations. The employment of professional and related occupations is expected to increase by 16.8 percent, resulting in 5.2 million new jobs over the projection period. It is estimated that more than 1.4 million new professional and related jobs will arise in the healthcare industry. In addition, more than 1.3 mil-

lion are expected to be created in educational services, and more than 1.2 million are expected to be added in the rapidly growing professional, scientific, and technical services industry sector.

Employment among healthcare practitioner and technical occupations, an occupational group within the professional and related category, is expected to increase by 21.4 percent. (See table 2.) This growth, which, according to projections, will result in almost 1.6 million new jobs, will be driven by an increasing demand for healthcare services. As the number of older people continues to grow and as new developments allow for the treatment of more medical conditions, more healthcare professionals will be needed. With roughly 581,500 new jobs anticipated for the projection period, the most of any single occupation in the economy, registered nurses will account for more than one-third of the growth in this occupational group. Licensed practical and licensed vocational nurses, as well as pharmacy technicians, also are expected to increase by a substantial number of jobs: roughly 155,600 and 99,800, respectively.

It is estimated that education, training, and library occupations will add more than 1.3 million jobs, representing a growth rate of more than 14.4 percent. As the U.S. population grows, large numerical increases will be seen for primary, secondary, and special education teachers, occupations which, together, are projected to contribute 647,300 jobs. In addition, as a larger share of adults seeks educational services, a substantial number of jobs for post-secondary teachers also will arise.

Computer and mathematical occupations are expected to add 785,700 new jobs from 2008 to 2018, and, as a group, they will grow more than twice as fast as the average for all occupations in the economy, according to projections. It is anticipated that computer specialists will account for the vast majority of this growth, increasing by 762,700 jobs. Demand for computer specialists will be driven by the continuing need for businesses, government agencies, and other organizations to adopt the latest technologies. It is projected that computer software applications engineers will increase by 175,100 jobs—more than the projected increase for any other type of computer specialists. Network systems and data communications analysts are projected to see an increase of 155,800 jobs. New computer specialist jobs will arise in almost every industry, but roughly half will be located in the computer systems design industry, which is expected to employ more than one in four computer specialists in 2018.

Employment in community and social services occupations is projected to increase by 16.5 percent, growing by roughly 448,400 jobs. As health insurance providers increasingly cover mental and behavioral health treatment, and as a growing number of elderly individuals seek social services, demand for workers in these occupations will increase. It is estimated that counselors, social workers, and other community and social services specialists will account for roughly 349,700 of the new jobs and that religious workers will account for about 98,800.

It is projected that arts, design, entertainment, sports, and media occupations will see employment growth of rough-

ly 12.1 percent from 2008 to 2018, resulting in 332,600 new jobs. This growth will be spread broadly across the occupations within this group. Media and communications-related occupations will add a substantial number of jobs, led by rapid growth among public relations specialists. These workers will be needed in greater numbers as firms place greater emphasis on managing their public image. Employment in the occupational group of entertainers and performers, sports and related occupations, also will increase, partly as a result of increasing demand for coaches and scouts. Furthermore, art and design occupations will see substantial growth as demand increases for graphic and interior designers. As more advertising is conducted over the Internet, a medium that generally includes many graphics, and as businesses and households increasingly seek professional design services, a greater number of these workers will be needed.

Employment in life, physical, and social science occupations is expected to increase by 277,200 jobs over the 2008–18 projection period. This increase represents a growth rate of 19.0 percent, almost twice the average for all occupations across the economy. It is anticipated that about 116,700 of the new jobs created will be in social science and related occupations and that there will be especially strong growth among market and survey researchers. As businesses increase their marketing efforts in order to remain competitive and as public policy firms and government agencies conduct more public opinion research, the employment of market and survey researchers will grow at a projected rate of 28.3 percent. Employment in life sci-

Table 2. Employment by occupational group within the professional and related occupations and service occupations groups, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment		Change, 2008–18	
		2008	2018	Numeric	Percent
15–29–0000	Professional and related occupations.....	31,053.5	36,280.0	5,226.5	16.8
15–0000	Computer and mathematical occupations.....	3,540.4	4,326.1	785.7	22.2
17–0000	Architecture and engineering occupations.....	2,636.0	2,906.6	270.6	10.3
19–0000	Life, physical, and social science occupations.....	1,460.8	1,738.0	277.2	19.0
21–0000	Community and social services occupations.....	2,723.7	3,172.1	448.4	16.5
23–0000	Legal occupations.....	1,251.0	1,439.4	188.4	15.1
25–0000	Education, training, and library occupations.....	9,209.5	10,533.6	1,324.1	14.4
27–0000	Arts, design, entertainment, sports, and media occupations.....	2,740.9	3,073.4	332.6	12.1
29–0000	Healthcare practitioners and technical occupations.....	7,491.3	9,090.8	1,599.6	21.4
31–39–0000	Service occupations.....	29,575.9	33,645.1	4,069.2	13.8
31–0000	Healthcare support occupations.....	3,982.4	5,129.5	1,147.1	28.8
33–0000	Protective service occupations.....	3,270.0	3,670.1	400.1	12.2
35–0000	Food preparation and serving and related occupations.....	11,552.1	12,559.6	1,007.6	8.7
37–0000	Building and grounds cleaning and maintenance occupations.....	5,727.2	6,211.0	483.9	8.5
39–0000	Personal care and service occupations.....	5,044.2	6,074.8	1,030.6	20.4

ence occupations also will increase rapidly. Medical scientists, except epidemiologists, will account for much of the growth in these occupations and, at an estimated growth rate of 40.4 percent, will be among the fastest growing occupations across the economy.

Architecture and engineering occupations are expected to add roughly 270,600 jobs, representing a growth rate of 10.3 percent over the 2008–18 period. About 178,300 of these jobs, more than 6 out of 10, are expected to be for engineers, and the growth of civil engineers is anticipated to be especially robust. As a greater emphasis is placed on improving the Nation's infrastructure, civil engineers will be needed to design, implement, and upgrade transportation, water supply, and pollution control systems. In addition, it is estimated that the occupation of drafters, engineering, and mapping technicians will increase by roughly 52,200 jobs and that architects, surveyors, and cartographers will increase by 40,100.

Legal occupations are expected to add the fewest new jobs among all the professional and related occupations, increasing by roughly 188,400. However, with a projected growth rate of almost 15.1 percent, legal occupations will grow faster than the average for all occupations in the economy. It is anticipated that lawyers will account for 98,500 of these jobs and that paralegals and legal assistants will account for 74,100. In part because legal establishments are expected to continue to expand the role of paralegals and legal assistants and assign them more of the tasks once performed by lawyers, it is estimated that the employment of paralegals and legal assistants will increase at a rate of 28.1 percent.

Service occupations. Employment in service occupations is projected to increase by 13.8 percent from 2008 to 2018, resulting in roughly 4.1 million new jobs. It is estimated that about 1.2 million of these jobs will appear in the health care industry sector and that more than 736,000 will arise in the food services and drinking places industry subsector.

Among service occupations, the largest number of new jobs is expected to arise in healthcare support occupations. (See table 2.) With more than 1.1 million new jobs expected, employment in healthcare support occupations is projected to increase by 28.8 percent. Much of this growth will be the result of high demand for home health aides. Compared with all occupations across the economy, home health aides are expected to see the second-largest number of new jobs—460,900—and experience the third-fastest rate of growth, 50.0 percent. Because home care can be a lower cost alternative to institutional care,

and because many individuals prefer home care to long-term stays in healthcare facilities, hiring a home health aide will become an increasingly popular option. Many individuals, however, will require treatment in healthcare facilities. As a result, demand for nursing aides, orderlies, and attendants will increase rapidly, leading to roughly 276,000 new jobs.

Employment in personal care and service occupations is projected to grow by 20.4 percent over the 2008–18 projection period, adding 1.0 million jobs. This group contains a wide variety of occupations, but two of them, personal and home care aides and child care workers, will account for a large proportion of the new jobs. It is estimated that personal and home care aides will increase by 375,800 jobs as a growing number of elderly individuals require assistance with daily tasks. Child care workers are expected to see 142,100 new jobs, mainly because formal preschool programs, which employ child care workers alongside preschool teachers, are expected to become more prevalent.

Food preparation and serving related occupations are expected to add roughly 1.0 million jobs from 2008 to 2018, representing a growth rate of 8.7 percent. It is anticipated that almost 6 in 10 new jobs in this occupational group will appear among two occupations: fast food and counter workers, with a projected increase of 443,300 jobs, and waiters and waitresses, with a projected increase of 151,600 jobs. As consumers continue to prefer the convenience of prepared foods, demand for these occupations will grow.

Building and grounds cleaning and maintenance occupations are expected to see 483,900 new jobs over the projection period, representing a growth rate of 8.5 percent. Grounds maintenance workers are expected to increase by 236,800, and building cleaning workers are projected to increase by 191,500. As businesses place a larger emphasis on grounds aesthetics and as households increasingly rely on contract workers to maintain their yards, grounds maintenance workers will see rapid growth. In addition, more building cleaning workers will be needed to maintain an increasing number of residential and commercial structures. Almost 6 in 10 new jobs in the occupational group are expected to appear in the services to buildings and dwellings industry group, as the job functions relevant to this occupational group are increasingly outsourced to this industry group.

Protective service occupations are expected to see the fewest new jobs among all service occupations, with an increase of about 400,100 jobs, or 12.2 percent. Almost 152,500 new security guards, the occupation in this group

with the largest projected job growth, are expected as an increasing number of businesses and other organizations emphasize crime and vandalism reduction. In addition, it is estimated that about 121,500 new law enforcement jobs will arise, largely as a result of population growth.

Sales and related occupations. Employment in this occupational group is projected to increase by 980,400 jobs from 2008 to 2018, representing a growth rate of 6.2 percent. More than half of the new jobs in this group, about 513,800, are expected to be for retail sales workers. As organizations offer a wider array of products and devote an increasing share of resources to customer service, many new retail sales workers will be needed. Job growth in this group will be spread across a wide variety of industries, but almost half is expected to occur in retail trade establishments.

Office and administrative support occupations. With a projected growth rate of 7.6 percent, this occupational group is expected to add more than 1.8 million jobs over the projection period. This group contains a wide variety of occupations with very different employment outlooks. Secretaries and administrative assistants are expected to see a large number of new jobs, 471,600. It is anticipated that customer service representatives will increase by about 399,500 as businesses place a growing emphasis on relationships with customers. The occupation of Postal Service workers, by contrast, is projected to lose more than 72,100 jobs, declining by 12.0 percent. Because the use of electronic mail and bill-pay services is increasing and many Postal Service tasks are becoming automated, fewer of these workers will be needed by 2018. The new office and administrative support jobs will be distributed across a variety of industries, but about 516,900 are expected to appear in the professional, scientific, and technical services industry sector and roughly 501,500 are expected to arise in the health care and social assistance industry sector. In addition, the employment of office and administrative support workers will grow relatively fast—at a rate of 15.2 percent, according to projections—in the administrative and support services industry subsector, as more office and administrative support work is outsourced to this industry subsector.

Farming, fishing, and forestry occupations. Employment in this small occupational group is projected to remain largely unchanged from its 2008 level. Productivity increases in agriculture will lead to declining employment among agricultural workers, which will offset small gains among

forest, conservation, and logging workers. It is anticipated that the majority of the jobs in this group, about 7 in 10, will continue to be found in the agriculture, forestry, fishing, and hunting industry sector.

Construction and extraction occupations. Employment in construction and extraction occupations is projected to increase by 13.0 percent from 2008 to 2018, expanding by more than 1.0 million new jobs. Demand for workers in these occupations will grow as, over the 2008–18 projection period, construction on homes, office buildings, and infrastructure projects increases. Growth will also be influenced by the recession that began in 2007. The construction industry was hit particularly hard by this recession as average annual employment for wage and salary workers fell by 415,100 jobs from 2007 to 2008, a decline of 5.4 percent.⁶ Because of this low starting point, growth over the 2008–18 period will be stronger than it would have been had 2008 not been a recession year. It is estimated that more than half of the new jobs in this occupational group, about 543,100, will arise in the specialty trade contracting industry subsector and that about 227,400 will appear in the building construction industry subsector. In addition, about 98,800 new jobs are expected to arise among self-employed workers.

Installation, maintenance, and repair occupations. This group is expected to add about 440,200 jobs over the projection period, representing a 7.6-percent rate of growth. It is projected that more than one in three new jobs in this group will arise in the construction industry sector; workers in this sector are integral to the development of buildings, communication structures, transportation systems, and other types of infrastructure. As construction on these types of projects increases over the projection period, these workers will be needed in greater numbers.

Production occupations. Employment in production occupations is expected to decline by more than 349,200 jobs, roughly 3.5 percent, from 2008 to 2018. Like many other occupational groups, this group was heavily affected by the recession that began in 2007; from 2007 to 2008, the manufacturing industry sector lost an annual average of 448,000 wage and salary jobs, a decline of 3.3 percent.⁷ Because of the low starting point, declines over the 2008–18 period will be smaller than they would have been had 2008 not been a recession year. Production occupations represent a wide array of jobs, but it is projected that almost half of all job losses in the group will occur among metal workers and plastic workers. In addition, textile, ap-

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parel, and furnishing occupations will lose a large number of jobs. Roughly 7 in 10 production jobs are located in the manufacturing industry sector. As productivity increases in manufacturing reduce the need for workers and as a growing number of production jobs are outsourced offshore, demand for production workers will decline.

Transportation and material moving occupations. Employment in this occupational group is projected to increase by 4.0 percent from 2008 to 2018, resulting in roughly 391,100 new jobs. Job gains will be spread across many industries, but a sizeable portion will arise in the transportation and warehousing industry sector. It is estimated that more than 6 in 10 new jobs in this group will be for truck drivers. As the economy grows over the projection period and the demand for goods increases, truck drivers will be needed to transport these goods to businesses, consumers, and other entities. In addition, a substantial number of jobs will arise for taxi drivers and chauffeurs as people seek alternative transportation options.

Growth by education or training category

BLS assigns each occupation to an education or training category that represents the most significant source of postsecondary education or training among workers in the occupation.⁸ The categories range from “short-term

on-the-job training” to “first professional degree.” (See the box on page 89 for descriptions.) In 2008, about 3 in 10 jobs were in occupations that were classified in a category involving some form of postsecondary award or degree. It is projected that occupations in such categories will account for almost half of all new jobs created from 2008 to 2018. (See table 3.)

Employment in occupations in the associate degree category, with a projected growth rate of 19.1 percent, is expected to increase more rapidly than employment in any other education or training category over the 2008–18 period. Several fast-growing healthcare occupations, such as dental hygienists and physical therapist assistants, will drive a substantial proportion of this change. Despite this rapid growth, however, jobs in this category are expected to account for only about 2.4 million total openings, about half of which will come from replacement needs. (Job openings and replacement needs are discussed in the next section.) With a projected growth rate of 7.5 percent, occupations in the long-term on-the-job training category will see the slowest rates of growth. Many occupations in this category are in the construction and extraction; installation, maintenance, and repair; or production occupational group.

Generally, occupations in lower education or training categories have lower pay than those in higher categories. Although the median annual wage for all occupations

Table 3. Employment and total job openings, by education and training category, 2008 and projected 2018

(Numbers in thousands)

Most significant source of education or training	Employment				Change, 2008–18		Total job openings due to growth and replacement needs, 2008–18 ¹		Median annual wages, May 2008 ²
	Number		Percent distribution		Numeric	Percent	Numeric	Percent distribution	
	2008	2018	2008	2018					
Total, all occupations.....	150,931.7	166,205.6	100.0	100.0	15,273.9	10.1	50,928.5	100.0	\$32,390
First professional degree.....	2,000.9	2,353.6	1.3	1.4	352.6	17.6	745.6	1.5	\$122,550
Doctoral degree.....	2,085.0	2,430.4	1.4	1.5	345.4	16.6	742.9	1.5	\$61,200
Master's degree.....	2,531.3	2,995.3	1.7	1.8	464.0	18.3	1,007.9	2.0	\$55,170
Bachelor's or higher degree, plus work experience	6,518.5	7,068.1	4.3	4.3	549.6	8.4	2,106.2	4.1	\$89,720
Bachelor's degree.....	18,584.4	21,669.2	12.3	13.0	3,084.8	16.6	7,071.8	13.9	\$57,770
Associate degree.....	6,128.7	7,296.5	4.1	4.4	1,167.8	19.1	2,372.4	4.7	\$54,320
Postsecondary vocational award.....	8,787.3	9,951.5	5.8	6.0	1,164.1	13.2	2,926.9	5.7	\$32,380
Work experience in a related occupation...	14,516.9	15,696.9	9.6	9.4	1,180.0	8.1	4,195.9	8.2	\$45,650
Long-term on-the-job training.....	10,814.6	11,620.5	7.2	7.0	805.8	7.5	3,081.2	6.1	\$39,630
Moderate-term on-the-job training.....	24,568.5	26,531.1	16.3	16.0	1,962.6	8.0	7,058.5	13.9	\$30,640
Short-term on-the-job training.....	54,395.5	58,592.5	36.0	35.3	4,197.0	7.7	19,619.1	38.5	\$21,320

¹ Total job opening represent the sum of employment increases and net replacements. If employment change is negative, job openings due to growth are zero and total job openings equal net replacements.

² For wage and salary workers, from the Occupational Employment Statistics survey.

Classification of occupations by most significant source of education or training

Occupations are classified into 1 of 11 categories according to the following principles:

- An occupation is placed into the category that best describes the education or training needed by most workers to become fully qualified in that occupation.
- If generally needed for entry into an occupation, postsecondary awards take precedence over work-related training, even though additional skills or experience may be needed for a worker to become fully qualified in the occupation.
- The length of time an average worker generally needs to become fully qualified in an occupation through a combination of on-the-job training and experience is used to categorize occupations in which a postsecondary award generally is not needed for entry into the occupation.

Postsecondary awards

First professional degree. Completion of such a degree usually requires at least 3 years of full-time academic study beyond a bachelor's degree. Examples of occupations in this category are lawyers, and physicians and surgeons.

Doctoral degree. Completion of a Ph.D. or other doctoral degree usually requires at least 3 years of full-time academic study beyond a bachelor's degree. Examples of occupations in this category are postsecondary teachers, and medical scientists, except epidemiologists.

Master's degree. Completion of the degree usually requires 1 or 2 years of full-time academic study beyond a bachelor's degree. Examples of occupations in this category are educational, vocational, and school counselors, and clergy.

Bachelor's or higher degree, plus work experience Most occupations in this category are management occupations. All occupations in this category require experience in a related nonmanagement position for which a bachelor's or higher degree is usually required. Examples of occupations in this category are general and operations managers; and judges, magistrate judges, and magistrates.

Bachelor's degree. Completion of the degree generally requires about 4 years of full-time academic study. Examples of occupations in this category are accountants and auditors, and elementary school teachers, except special education.

Associate degree. Completion of the degree usually requires at least 2 years of full-time academic study. Examples of occupations in this category are paralegals and legal assistants, and

medical records and health information technicians.

Postsecondary vocational award. Some of these programs last only a few weeks, whereas others last more than a year. Programs lead to a certificate or other award, but not a degree. Examples of occupations in this category are nursing aides, orderlies, and attendants, and hairdressers, hairstylists, and cosmetologists.

Work-related training

Work experience in a related occupation. Most of the occupations in this category are first-line supervisors or managers of service, sales and related, production, or other occupations, or are management occupations.

Long-term on-the-job training. Generally, occupations in this category require more than 12 months of on-the-job training or require combined work experience and formal classroom instruction for workers to develop the skills necessary to be fully qualified in the occupation. Occupations in this category include formal and informal apprenticeships that may last up to 5 years. Long-term on-the-job training also includes intensive occupation-specific, employer-sponsored programs that workers must complete. Among such programs are those conducted by fire and police academies and by schools for air traffic controllers and flight attendants. In other occupations—insurance sales and securities sales, for example—trainees take formal courses, often provided at the jobsite, to prepare for the required licensing exams. Individuals undergoing training generally are considered to be employed in the occupation. Also included in this category are occupations that generally involve the development of a natural ability—such as that possessed by musicians, athletes, actors, or other entertainers—that must be cultivated over several years, frequently in a nonwork setting.

Moderate-term on-the-job training. In this category of occupations, the skills needed to be fully qualified in the occupation can be acquired during 1 to 12 months of combined on-the-job experience and informal training. Examples of occupations in this category are truckdrivers, heavy and tractor-trailer; and secretaries, except legal, medical, and executive.

Short-term on-the-job training. In occupations in this category, the skills needed to be fully qualified in the occupation can be acquired during a short demonstration of job duties or during 1 month or less of on-the-job experience or instruction. Examples of these occupations are retail salespersons, and waiters and waitresses.

was \$32,390 in May 2008, occupations in the categories involving a postsecondary award or degree or extensive work experience in a related occupation had much higher

median wages. Occupations in the short-term on-the-job training category, for example, had median annual wages of \$21,320, while occupations that generally require

a first professional degree had median annual wages of \$122,550.

Detailed occupations

Occupational employment projections can be analyzed in a number of ways. In this article, projections are typically presented and discussed in terms of percent changes and numeric changes. Both perspectives are important, as focusing on only one can be misleading. In many cases, occupations with low levels of employment, such as financial examiners, may grow very rapidly (projected growth of 41.2 percent) but generate relatively few new jobs (11,100). Alternatively, an occupation with a large number of jobs, like retail salespersons, may grow more slowly (projected growth of 8.3 percent) but generate a much larger number of new jobs over the 10-year projection period (374,700).

As is the case with occupational groups, growth will vary among individual occupations. It is estimated that the employment of biomedical engineers, the occupation with the fastest projected rate of growth, will increase by 72.0 percent from 2008 to 2018. (See table 4.) Textile bleaching and dyeing machine operators and tenders, conversely, are expected to decrease in number by 44.8 percent, more rapidly than any other occupation. Registered nurses are expected to increase by more than 581,500 new jobs, the largest numerical increase, while farmers and ranchers, at the other extreme, will lose roughly 79,200.

In total, 577 occupations are expected to show increasing employment, resulting in more than 16.6 million new jobs from 2008 to 2018. The remaining 173 occupations are expected to decline in employment, losing almost 1.4 million jobs. This will result in an increase of more than 15.3 million jobs for all occupations combined, according to projections. It is estimated that the 30 occupations with the most robust growth in numerical terms will account for roughly 7.3 million new jobs, which represent almost half of the total growth among occupations with increasing employment. This projected increase in employment is far greater than that of the 30 fastest growing occupations, which will account for about 2.3 million new jobs. Because rapidly growing occupations tend to have lower levels of employment, they generally contribute less to total job growth than many occupations that are growing less quickly.

The 30 occupations with the largest projected declines are expected to decrease by a total of about 910,300 jobs, roughly two-thirds of the total among occupations with declining employment. Four occupations will be among

both the occupations with the largest numbers of new jobs and those with the fastest rates of growth, each of the four projected to increase by at least 34.0 percent and expand by at least 155,800 new jobs: network systems and data communications analysts, computer applications software engineers, home health aides, and personal and home care aides.

Fastest growing occupations. According to projections, the 30 occupations with the fastest rates of growth will each increase by more than 29 percent from 2008 to 2018. (See table 4.) Seventeen of these are professional and related occupations, seven of which are in the healthcare practitioners and technical occupations occupational group. Ten of the thirty fastest growing occupations are service occupations, including seven occupations from the healthcare support occupations occupational group. Three of the fastest growing are management occupations or business and financial operations occupations.

For 14 of the 30 fastest growing occupations, a bachelor's or higher degree is the most significant source of education or training. Seven are in the postsecondary vocational award or associate degree category, one is categorized under work experience in a related occupation, and the remaining eight are in an on-the-job training category.

A substantial portion of the 30 fastest growing occupations are directly related to healthcare. As elderly individuals account for an increasing share of the U.S. population and as new developments allow for the treatment of a broader range of medical conditions, demand for health-care services will grow rapidly. Several of the fastest growing occupations, such as home health aides and personal and home care aides, are generally employed outside of traditional inpatient establishments. It is anticipated that, as cost pressures mount and as individuals seek alternatives to long-term institutional care, employment in these occupations will grow by 50.0 percent and 46.0 percent, respectively. Fitness trainers and aerobics instructors, in addition, will increase rapidly in number as a growing number of individuals participate in programs promoting health and wellness.

Cost pressures will, to some extent, influence demand for a number of other healthcare occupations as well. Physician assistants and occupational therapist assistants, for example, will be used to treat individuals with fairly basic medical needs, allowing physicians and surgeons and occupational therapists, who command higher salaries, to focus on patients with more complex treatment needs. Pharmacy technicians also will assume a broader range of duties, as pharmacists devote more effort to patient care.

Table 4. Fastest growing occupations, 2008–18

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Occupational group	Employment		Change, 2008–18		Quartile rank by 2008 median wages ¹	Most significant source of postsecondary education or training ²
			2008	2018	Number	Percent		
17–2031	Biomedical engineers.....	Professional and related	16.0	27.6	11.6	72.0	VH	Bachelor's degree
15–1081	Network systems and data communications analysts.....	Professional and related	292.0	447.8	155.8	53.4	VH	Bachelor's degree
31–1011	Home health aides.....	Service	921.7	1382.6	460.9	50.0	VL	Short-term on-the-job training
39–9021	Personal and home care aides..	Service	817.2	1193.0	375.8	46.0	VL	Short-term on-the-job training
13–2061	Financial examiners.....	Management, business, and financial	27.0	38.1	11.1	41.2	VH	Bachelor's degree
19–1042	Medical scientists, except epidemiologists.....	Professional and related	109.4	153.6	44.2	40.4	VH	Doctoral degree
29–1071	Physician assistants.....	Professional and related	74.8	103.9	29.2	39.0	VH	Master's degree
39–5094	Skin care specialists.....	Service	38.8	53.5	14.7	37.9	L	Postsecondary vocational award
19–1021	Biochemists and biophysicists..	Professional and related	23.2	31.9	8.7	37.4	VH	Doctoral degree
29–9091	Athletic trainers.....	Professional and related	16.3	22.4	6.0	37.0	H	Bachelor's degree
31–2022	Physical therapist aides.....	Service	46.1	62.8	16.7	36.3	L	Short-term on-the-job training
29–2021	Dental hygienists.....	Professional and related	174.1	237.0	62.9	36.1	VH	Associate degree
29–2056	Veterinary technologists and technicians.....	Professional and related	79.6	108.1	28.5	35.8	L	Associate degree
31–9091	Dental assistants.....	Service	295.3	400.9	105.6	35.8	L	Moderate-term on-the-job training
15–1031	Computer software engineers, applications.....	Professional and related	514.8	689.9	175.1	34.0	VH	Bachelor's degree
31–9092	Medical assistants.....	Service	483.6	647.5	163.9	33.9	L	Moderate-term on-the-job training
31–2021	Physical therapist assistants.....	Service	63.8	85.0	21.2	33.3	H	Associate degree
29–1131	Veterinarians.....	Professional and related	59.7	79.4	19.7	33.0	VH	First professional degree
25–3021	Self-enrichment education teachers.....	Professional and related	253.6	334.9	81.3	32.0	H	Work experience in a related occupation
13–1041	Compliance officers, except agriculture, construction, health and safety, and transportation.....	Management, business, and financial	260.2	341.0	80.8	31.1	H	Long-term on-the-job training
31–2012	Occupational therapist aides....	Service	7.8	10.2	2.4	30.7	L	Short-term on-the-job training
17–2081	Environmental engineers.....	Professional and related	54.3	70.9	16.6	30.6	VH	Bachelor's degree
29–2052	Pharmacy technicians.....	Professional and related	326.3	426.0	99.8	30.6	L	Moderate-term on-the-job training
15–1032	Computer software engineers, systems software.....	Professional and related	394.8	515.0	120.2	30.4	VH	Bachelor's degree
19–3022	Survey researchers.....	Professional and related	23.4	30.5	7.1	30.4	H	Bachelor's degree
29–1123	Physical therapists.....	Professional and related	185.5	241.7	56.2	30.3	VH	Master's degree
13–2052	Personal financial advisors.....	Management, business, and financial						Bachelor's degree
17–3025	Environmental engineering technicians.....	Professional and related	21.2	27.5	6.4	30.1	H	Associate degree
31–2011	Occupational therapist assistants..	Service	26.6	34.6	7.9	29.8	H	Associate degree
39–9031	Fitness trainers and aerobics instructors.....	Service	261.1	337.9	76.8	29.4	L	Postsecondary vocational award

¹ The quartile rankings of Occupational Employment Statistics survey annual wage data are presented in the following categories: VH = very high (\$51,540 or more), H = high (\$32,390 to \$51,530), L = low (\$21,590 to \$32,380), and VL = very low (under \$21,590). Wages are for wage and salary workers.

² An occupation is placed into 1 of 11 categories that best describes the

postsecondary education on training needed by most workers to become fully qualified in that occupation. For more information about the categories, see *Occupational Projections and Training Data*, 2008–09 edition, bulletin 2702 (Bureau of Labor Statistics), on the Internet at www.bls.gov/emp/optd (visited Dec. 8, 2009); and the technical documentation accompanying the 2008–18 employment projections, available on the Internet at www.bls.gov/emp/ep_education_tech.htm (visited Dec. 8, 2009).

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Although most athletic trainers will remain employed in schools and universities, more athletic trainers will be needed in hospitals, outpatient treatment facilities, and other settings as overall health and wellness is emphasized more by healthcare establishments.

Several occupations involved in medical research also will grow rapidly. Growth among biomedical engineers, biochemists and biophysicists, and medical scientists, except epidemiologists, will be driven by continued emphasis on researching new diseases, alleviating more ailments, and further improving patients' quality of life.

Three of the fastest growing occupations are computer specialist occupations. Network systems and data communications analysts, the occupation with the second-fastest rate of growth, will see gains across a wide range of industries. Because businesses will continue to adopt newer networking technologies and individuals and organizations will develop a growing reliance on the Internet, employment in this occupation is expected to increase by 53.4 percent. Furthermore, as new software products are needed to facilitate this reliance on technology, computer software applications engineers and systems software engineers also will grow rapidly in number.

Several business and financial operations occupations also will grow much faster than the average for all occupations. As a large segment of the workforce reaches retirement age, a greater number of personal financial advisors will be needed to help these individuals prepare for their financial futures. In addition, because many businesses are replacing traditional pension plans with personal savings options, a growing number of younger individuals will seek financial advice long before they retire. Furthermore, as the financial regulatory environment becomes more complex, the employment of financial examiners, as well as that of the occupation of compliance officers, except agriculture, construction, health and safety, and transportation, will increase at rapid rates.

Increased interest in and awareness of environmental issues should spur rapid growth among environmental engineers and environmental engineering technicians. As organizations devise ways to reduce their impact on the environment and as more emphasis is placed on preventing damage before it occurs, employment in each of these specialties is expected to increase by 30.6 percent and 30.1 percent, respectively, from 2008 to 2018.

The increasing popularity of household pets will lead to employment growth among veterinarians, as well as veterinary technologists and technicians. As the pet population grows, as households increasingly seek medical services for their pets, and as new developments lead to treatments

for a wider variety of conditions, these occupations are expected to expand rapidly. Over the course of the projection decade, as the number of cosmetic and health spas increases, the employment of skin care specialists will grow by a projected rate of 37.9 percent. Skin care treatments should remain popular as consumers continue to see them as an affordable luxury.

Self-enrichment teachers offer instruction in a wide range of areas, such as foreign languages, computer literacy, and public speaking. These workers are expected to see an increase in demand as individuals look to expand their skill sets. Survey researchers will show rapid growth as businesses, government agencies, and other organizations attempt to measure a variety of phenomena, such as the popularity of mass transit and the need for social assistance programs.

Occupations with the largest numerical growth. It is estimated that each of the 30 occupations with the largest projected job growth in numerical terms will add at least 134,900 new jobs over the 2008–18 projection period. (See table 5.) The occupations on this list are very diverse, coming from a wide range of occupational groups. Nine are service occupations, including three from the health-care support group and two from the personal care and service group. Six are from the office and administrative support occupational group, and eight are professional and related occupations. Two are business and financial operations occupations, and two are construction and extraction occupations. In addition, the sales and related; installation, maintenance, and repair; and transportation and material moving occupational groups each contain 1 of the 30 occupations with the most new jobs.

Of the 30 occupations on this list, most are projected to grow faster in percent terms than the average for all occupations across the economy. Two, however, will grow more slowly. Because these occupations had a large number of jobs in 2008, however, their projected modest growth rates are still expected to lead to substantial job creation. The employment of waiters and waitresses, for example, is expected to grow by 6.4 percent over the projection period, slower than the projected average of 10.1 percent for all occupations. However, because there were 2.4 million waiters and waitresses in 2008, this slower rate of growth still is expected to lead to 151,600 new jobs, placing it in the 26th spot on this list.

Seven of the thirty occupations on the list are classified under a bachelor's or higher degree education or training category. For three, an associate degree or postsecondary vocational award is the most significant form of education

Table 5. Occupations with the largest projected job growth, 2008–18

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Occupational group	Employment		Change, 2008–18		Quartile rank by 2008 median wages ¹	Most significant source of postsecondary education or training ²
			2008	2018	Numeric	Percent		
29–1111	Registered nurses.....	Professional and related Service	2618.7	3200.2	581.5	22.2	VH	Associate degree
31–1011	Home health aides.....		921.7	1382.6	460.9	50.0	VL	Short-term on-the-job training
43–4051	Customer service representatives.....	Office and administrative support	2252.4	2651.9	399.5	17.7	L	Moderate-term on-the-job training
35–3021	Combined food preparation and serving workers, including fast food.....		2701.7	3096.0	394.3	14.6	VL	Short-term on-the-job training
39–9021	Personal and home care aides...	Service	817.2	1193.0	375.8	46.0	VL	Short-term on-the-job training
41–2031	Retail salespersons.....	Sales and related	4489.2	4863.9	374.7	8.4	VL	Short-term on-the-job training
43–9061	Office clerks, general.....	Office and administrative support	3024.4	3383.1	358.7	11.9	L	Short-term on-the-job training
13–2011	Accountants and auditors.....	Management, business, and financial	1290.6	1570.0	279.4	21.7	VH	Bachelor's degree
31–1012	Nursing aides, orderlies, and attendants.....	Service	1469.8	1745.8	276.0	18.8	L	Postsecondary vocational award
25–1000	Postsecondary teachers.....	Professional and related	1699.2	1956.1	256.9	15.1	VH	Doctoral degree
47–2061	Construction laborers	Construction and extraction	1248.7	1504.6	255.9	20.5	L	Moderate-term on-the-job training
25–2021	Elementary school teachers, except special education.....	Professional and related	1549.5	1793.7	244.2	15.8	H	Bachelor's degree
53–3032	Truck drivers, heavy and tractor-trailer.....	Transportation and material moving	1798.4	2031.3	232.9	13.0	H	Short-term on-the-job training
37–3011	Landscaping and groundskeeping workers.....	Service	1205.8	1422.9	217.1	18.0	L	Short-term on-the-job training
43–3031	Bookkeeping, accounting, and auditing clerks.....	Office and administrative support	2063.8	2276.2	212.4	10.3	H	Moderate-term on-the-job training
43–6011	Executive secretaries and administrative assistants.....	Office and administrative support	1594.4	1798.8	204.4	12.8	H	Work experience in a related occupation
13–1111	Management analysts.....	Management, business, and financial	746.9	925.2	178.3	23.9	VH	Bachelor's or higher degree, plus work experience
15–1031	Computer software engineers, applications.....	Professional and related	514.8	689.9	175.1	34.0	VH	Bachelor's degree
43–4171	Receptionists and information clerks.....	Office and administrative support	1139.2	1312.1	172.9	15.2	L	Short-term on-the-job training
47–2031	Carpenters.....	Construction and extraction	1284.9	1450.3	165.4	12.9	H	Long-term on-the-job training
31–9092	Medical assistants.....	Service	483.6	647.5	163.9	33.9	L	Moderate-term on-the-job training
43–1011	First-line supervisors/managers of office and administrative support workers.....	Office and administrative support	1457.2	1617.5	160.3	11.0	H	Work experience in a related occupation
15–1081	Network systems and data communications analysts.....	Professional and related	292.0	447.8	155.8	53.4	VH	Bachelor's degree
29–2061	Licensed practical and licensed vocational nurses.....	Professional and related	753.6	909.2	155.6	20.7	H	Postsecondary vocational award

See footnotes at end of table.

Table 5. Continued—Occupations with the strongest projected job growth, 2008–18

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Occupational group	Employment		Change, 2008–18		Quartile rank by 2008 median wage	Most significant source of post secondary education or training
			2008	2018	Numeric	Percent		
33–9032	Security guards.....	Service	1076.6	1229.1	152.5	14.2	L	Short-term on-the-job training
35–3031	Waiters and waitresses.....	Service	2381.6	2533.3	151.6	6.4	VL	Short-term on-the-job training
49–9042	Maintenance and repair workers, general.....	Installation, maintenance, and repair	1361.3	1509.2	147.9	10.9	H	Moderate-term on-the-job training
29–1060	Physicians and surgeons.....	Professional and related	661.4	805.5	144.1	21.8	VH	First professional degree
39–9011	Child care workers.....	Service	1301.9	1443.9	142.1	10.9	VL	Short-term on-the-job training
25–9041	Teacher assistants.....	Professional and related	1312.7	1447.6	134.9	10.3	L	Short-term on-the-job training

¹ The quartile rankings of Occupational Employment Statistics survey annual wage data are presented in the following categories: VH = very high (\$51,540 or more), H = high (\$32,390 to \$51,530), L = low (\$21,590 to \$32,380), and VL = very low (under \$21,590). Wages are for wage and salary workers.

² An occupation is placed into 1 of 11 categories that best describes the

postsecondary education on training needed by most workers to become fully qualified in that occupation. For more information about the categories, see *Occupational Projections and Training Data, 2008–09* edition, bulletin 2702 (Bureau of Labor Statistics), on the Internet at www.bls.gov/emp/optd (visited Dec. 8, 2009); and the technical documentation accompanying the 2008–18 employment projections, available on the Internet at www.bls.gov/emp/ep_education_tech.htm (visited Dec. 8, 2009).

or training. The remaining 20 all fall under an on-the-job training category or under the category of work experience in a related occupation.

Several occupations with substantial projected job growth are associated with healthcare. Registered nurses are expected to expand by more than 581,500 new jobs over the course of the projection period, more than any other occupation. In addition, it is estimated that the employment of these workers will increase by 22.2 percent, more than twice as fast as the average. As elderly individuals constitute a larger portion of the population and the demand for healthcare services grows, a large number of new nurses will be needed. Home health aides, as well as personal and home care aides, also will benefit from this trend and will see increasing demand for their services as more individuals seek care outside of traditional institutional settings. Likewise, physicians and surgeons, medical assistants, licensed practical and licensed vocational nurses, and nursing aides, orderlies, and attendants all will experience strong job growth as a result of high demand for healthcare.

Accountants and auditors, as well as bookkeeping, accounting, and auditing clerks, will benefit from an increasingly complex regulatory environment. As financial scrutiny intensifies and as additional transparency requirements are established, both of these occupations are expected to exhibit large numerical increases. Growth

among bookkeeping, accounting, and auditing clerks will be tempered, somewhat, by improvements in technology that will lead to greater productivity and more automation of tasks. However, as one of the occupations with the highest levels of employment in 2008, its projected 10.3-percent growth rate still is expected to lead to more than 212,400 new jobs. Accountants and auditors are expected to grow by a rapid 21.7 percent, creating an even greater 279,400 jobs. In addition, as businesses strive to stay competitive and increase efficiency, more management analyst jobs will be created.

Two computer specialist occupations also will see large increases in employment. As businesses and other organizations continue to invest in information technology in order to increase efficiency and reduce costs, computer software applications engineers, as well as network systems and data communications analysts, will increase by roughly 175,100 and 155,800 jobs, respectively. In addition, as a result of high demand, these two occupations will be among those with the fastest rates of growth.

Customer service representatives and retail salespersons also are expected to add large number of jobs, increasing by 399,500 and 374,700, respectively. As businesses place a growing emphasis on customer service and client relationships and as retail establishments offer a wider range of products, these workers will be needed in greater numbers. In addition, as trade at the retail level expands and

as producers continue to transport a growing amount of goods, more heavy and tractor-trailer truck drivers will be needed to transport these items to various locations across the country.

Two food preparation and serving occupations also will be among the occupations with the largest numerical increases. Waiters and waitresses, as well as combined food preparation and service workers, including fast food, will experience substantial gains as consumers continue to take advantage of the convenience of prepared foods. As both fast-food and full-service restaurants increase in popularity and as more individuals purchase prepared foods from grocery stores, many new jobs will be created within these occupations.

Elementary school teachers, except special education, as well as teacher assistants, also will add large numbers of jobs. Growth will be driven by an increase in school enrollment and the demand for teacher assistants who can provide individual attention to children with special needs. In addition, as a greater emphasis is placed on early childhood education, a substantial number of new jobs will be created for child care workers, who often work alongside preschool teachers. Furthermore, as enrollment in colleges and universities increases, a large number of new postsecondary teachers will be needed.

The number of executive secretaries and administrative assistants, workers who perform fewer clerical duties than workers in many other office and administrative support occupations, will not be heavily affected by technological advances. As a result, employment in this large occupation will increase about as fast as the average, leading to a large number of new jobs. Receptionists and information clerks, as well as general office clerks, will see employment gains as a result of work restructuring. As the duties of workers in other administrative occupations are automated, reducing the need for specialized clerical workers, a larger number of employees will be given more general tasks and will be classified under these two occupations. In addition, as many new jobs are created in these office and administrative support occupations, a large number also will arise for the first-line supervisors of these workers.

Two occupations in particular, construction laborers and carpenters, will benefit from relatively strong growth in the construction industry. As new homes, office buildings, and other structures are built and as many existing buildings are remodeled, many new jobs will be created in these occupations. In addition, as the number of buildings expands, a substantial number of new jobs will be created for general maintenance and repair workers, who are already great in number.

Because businesses are expected to place a higher premium on grounds aesthetics and more individuals likely will choose to have their yards professionally maintained, demand will be high for landscaping and groundskeeping workers. Security guards will be needed in greater numbers as more businesses, multifamily housing units, and other organizations place greater emphasis on the prevention of crime and vandalism.

Occupations in decline. This section focuses on the occupations with the largest projected job declines in numerical terms. Decreases in employment occur for many reasons, including productivity gains and reduced demand for a particular good or service. The 30 occupations with the largest projected numerical declines each will lose at least 12,500 jobs over the projection period. (See table 6.) These occupations are highly concentrated in two occupational groups: 12 are production occupations and 11 are office and administrative support occupations. As for the rest, three are transportation and material moving occupations, two are sales and related occupations, and one is a management occupation.

None of these 30 occupations is classified in an education or training category that involves postsecondary education. For 29, the most significant form of education or training involves some on-the-job training. For the other occupation, the most significant form of education or training is work experience in a related occupation. Production occupations make up a substantial proportion of this list, largely as a result of a high concentration in the declining manufacturing industry sector. Because productivity in manufacturing operations is expected to increase rapidly and competition from foreign producers will intensify, fewer production workers will be needed. Together, the production occupations on this list are expected to account for a decline of 299,200 jobs.

Office and administrative support occupations also are heavily represented on this list. Whereas some occupations in this occupational group will see growth as a result of technology, as exemplified by the occupations from this group on the list of occupations with the greatest projected job growth in numerical terms, other occupations, including those on the list of declining occupations, will bear losses that also will result from improved technology. For example, Postal Service clerks and Postal Service mail sorters, processors, and processing machine operators will see declines as electronic communication continues to reduce demand for correspondence by post. File clerks, computer operators, data entry keyers, and switchboard operators also will see a reduction in jobs; as a result of

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Table 6. Occupations with the largest projected job declines in numerical terms, 2008–18

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Occupational group	Employment		Change, 2008–18		Quartile rank by wage, median wages ¹	Most significant source of postsecondary education or training ²
			2008	2018	Numeric	Percent		
11–9012	Farmers and ranchers.....	Management, business, and financial	985.9	906.7	-79.2	-8.0	H	Long-term on-the-job training
51–6031	Sewing machine operators.....	Production	212.4	140.9	-71.5	-33.7	VL	Moderate-term on-the-job training
43–4151	Order clerks.....	Office and administrative support	245.7	181.5	-64.2	-26.1	L	Short-term on-the-job training
43–5053	Postal service mail sorters, processors, and processing machine operators.....	Office and administrative support	179.9	125.3	-54.5	-30.3	H	Short-term on-the-job training
43–4071	File clerks	Office and administrative support	212.2	162.6	-49.6	-23.4	L	Short-term on-the-job training
43–5071	Shipping, receiving, and traffic clerks.....	Office and administrative support	750.5	701.2	-49.3	-6.6	L	Short-term on-the-job training
41–9041	Telemarketers.....	Sales and related	341.6	303.8	-37.8	-11.1	L	Short-term on-the-job training
43–9199	Office and administrative support workers, all other.....	Office and administrative support	306.7	271.0	-35.7	-11.6	L	Short-term on-the-job training
51–1011	First-line supervisors/managers of production and operating workers.....	Production	681.2	645.5	-35.7	-5.2	H	Work experience in a related occupation
53–7064	Packers and packagers, hand.....	Transportation and material moving	758.8	724.8	-34.0	-4.5	VL	Short-term on-the-job training
51–4031	Cutting, punching, and press machine setters, operators, and tenders, metal and plastic.....	Production	236.8	203.5	-33.3	-14.1	L	Moderate-term on-the-job training
51–2022	Electrical and electronic equipment assemblers.....	Production	213.3	182.0	-31.3	-14.7	L	Short-term on-the-job training
53–7063	Machine feeders and offbearers.....	Transportation and material moving	140.6	109.5	-31.2	-22.2	L	Short-term on-the-job training
41–9091	Door-to-door sales workers, news and street vendors, and related workers...	Sales and related	181.6	154.7	-26.9	-14.8	VL	Short-term on-the-job training
43–4199	Information and record clerks, all other.....	Office and administrative support	226.9	200.1	-26.7	-11.8	H	Short-term on-the-job training
51–9196	Paper goods machine setters, operators, and tenders.....	Production	103.3	81.0	-22.2	-21.5	H	Moderate-term on-the-job training
43–9011	Computer operators.....	Office and administrative support	110.0	89.5	-20.5	-18.6	H	Moderate-term on-the-job training
51–4041	Machinists.....	Production	421.5	402.2	-19.3	-4.6	H	Long-term on-the-job training
53–7062	Laborers and freight, stock, and material movers, hand.....	Transportation and material moving	2317.3	2298.6	-18.7	-0.8	L	Short-term on-the-job training
45–2090	Miscellaneous agricultural workers.....	Farming, fishing, and forestry	807.0	788.8	-18.2	-2.3	VL	Short-term on-the-job training
43–9021	Data entry keyers.....	Office and administrative support	284.3	266.9	-17.4	-6.1	L	Moderate-term on-the-job training
43–2011	Switchboard operators, including answering service.....	Office and administrative support	155.2	138.3	-16.9	-10.9	L	Short-term on-the-job training
51–9061	Inspectors, testers, sorters, samplers, and weighers.....	Production	464.7	447.8	-16.9	-3.6	L	Moderate-term on-the-job training

See footnotes at end of table.

Table 6. Continued—Occupations with the largest projected job declines in numerical terms, 2008–18

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Occupational group	Employment		Change, 2008–18		Quartile rank by wage, median wages ¹	Most significant source of postsecondary education or training ²
			2008	2018	Numeric	Percent		
43–9051	Mail clerks and mail machine operators, except postal service.....	Office and administrative support	141.4	124.8	–16.6	–11.8	L	Short-term on-the-job training
51–4034	Lathe and turning machine tool setters, operators, and tenders, metal and plastic.....	Production	55.7	40.8	–14.9	–26.7	H	Moderate-term on-the-job training
51–4033	Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic.....	Production	92.7	77.9	–14.8	–15.9	L	Moderate-term on-the-job training
51–6064	Textile winding, twisting, and drawing out machine setters, operators, and tenders.....	Production	34.9	20.7	–14.2	–40.7	L	Moderate-term on-the-job training
43–5051	Postal service clerks.....	Office and administrative support	75.8	62.1	–13.7	–18.0	H	Short-term on-the-job training
51–4081	Multiple machine tool setters, operators, and tenders, metal and plastic.....	Production	86.0	73.4	–12.6	–14.7	L	Moderate-term on-the-job training
51–9132	Photographic processing machine operators.....	Production	51.3	38.8	–12.5	–24.3	VL	Short-term on-the-job training

¹ The quartile rankings of Occupational Employment Statistics survey annual wage data are presented in the following categories: VH = very high (\$51,540 or more), H = high (\$32,390 to \$51,530), L = low (\$21,590 to \$32,380), and VL = very low (under \$21,590). Wages are for wage and salary workers.

² An occupation is placed into 1 of 11 categories that best describes the

postsecondary education on training needed by most workers to become fully qualified in that occupation. For more information about the categories, see *Occupational Projections and Training Data*, 2008–09 edition, bulletin 2702 (Bureau of Labor Statistics), on the Internet at www.bls.gov/emp/optd (visited Dec. 8, 2009); and the technical documentation accompanying the 2008–18 employment projections, available on the Internet at www.bls.gov/emp/ep_education_tech.htm (visited Dec. 8, 2009).

electronic document storage, sophisticated software packages, and efficient telecommunications equipment, demand for the services of these workers will decline.

The occupation of farmers and ranchers also will lose a substantial number of jobs. With a projected decrease of 79,200 jobs, farmers and ranchers will see greater losses than any other occupation. Because productivity in agriculture will increase, and because continuing consolidation in the farming industry will eliminate many small farms, fewer farmers and ranchers will be employed in 2018. In addition, because of these advances in productivity, miscellaneous agricultural workers, an occupation with a wide range of duties, will decline by 18,200 jobs.

Two sales and related occupations also are included among the occupations with the largest numerical declines. It is projected that telemarketers will decrease by 37,800 jobs, or 11.1 percent, as more consumers use the “do not call” list and as telemarketer jobs are increasingly sent offshore. It is anticipated that door-to-door sales workers, news and street vendors, and related workers will decrease by 26,900 jobs, or 14.8 percent, as these workers are less able to compete with large vendors and as newspaper circulation rates decline.

Several transportation and material moving occupations, additionally, will see large declines in employment. Advancements in technology and supply management processes, such as automated storage, retrieval, and data collection systems, will improve productivity among these occupations, reducing the need for workers.

Job openings from replacement needs

Projected job openings are a measure of the total number of workers who will be needed to meet demand for a particular occupation. Job openings arise when new jobs are created from economic growth and also when workers who have permanently left an occupation need to be replaced. Although economic growth will create a substantial number of job openings over the 2008–18 projection period, the majority are expected to come from replacement needs. Except in occupations that employ large numbers of young workers, such as the occupations of cashiers and retail salespersons, many of the job openings due to replacement needs are expected to arise in occupations that will lose workers to retirement. Replacement needs are anticipated to generate 34.3 million job open-

ings, compared with an expected net increase of 15.3 million jobs expected to be generated by economic growth.⁹ The projections of replacement needs, however, are based on past trends. Should retirement trends in an occupation change, actual needs may be greater or less than projected.

For the majority of occupations, job openings due to replacement needs exceed job openings due to growth. Most of the exceptions are occupations that are among the fastest growing occupations and occupations that require high levels of education or training. Because postsecondary education can be expensive and time consuming, individuals working in occupations with high educational and training requirements, such as financial analysts and civil engineers, often stay in their professions until retirement; thus, replacement needs in such occupations tend to be lower. Conversely, occupations that have lower education or training requirements, such as cashiers and customer service representatives, tend to have high numbers of job openings due to replacements. For example, it is estimated that there will be nearly 1.3 million openings for retail salespersons that will stem from replacement needs, but only around 374,700 openings due to growth. Similarly, although it is projected that the occupation of waiters and waitresses will generate only around 151,600 openings due to growth, the occupation is expected to provide close to 1.3 million openings from replacement needs.

Several occupations that are projected to decline over the 2008–18 period, ranging from managerial to material moving occupations, will actually account for substantial numbers of openings due to replacement needs. For example, the occupation of general and operations managers, though expected to decline by 2,300 jobs over the next decade, will provide 502,200 openings due to replacement needs. In addition, the occupation of laborers and freight, stock, and material movers, hand, is expected to generate 745,800 openings, while declining by 18,700 jobs. For declining occupations, all projected job openings come from replacement needs.

From the perspective of total job openings (jobs generated by economic growth combined with openings generated

by replacement needs), the number of openings in occupations falling into the bachelor's degree or higher category is expected to be 11.7 million. It is estimated that roughly 5.3 million will occur among occupations in the associate degree category and postsecondary vocational award category combined, and that 4.2 million will arise in occupations in the work experience in a related occupation category. It is projected that occupations in the short-term and moderate-term on-the-job-training categories will see 26.7 million, or about half, of total job openings and that occupations in the long-term on-the-job training category will account for a much smaller 3.1 million openings.

IN PROJECTING OCCUPATIONAL growth and decline, BLS makes assumptions about the size and makeup of the labor force, the size of the economy, demand for goods and services, and other factors that affect levels of employment. Changes in laws, business and consumer preferences, and technology may alter the BLS projections over time. However, given the set of assumptions found in the articles in this issue of the *Review*, BLS attempts to provide the reader with the best estimates of occupational employment change.

BLS projects that total employment will increase by 10.1 percent from 2008 to 2018, resulting in 15.3 million new jobs. Rapid growth is expected among healthcare occupations, as a larger elderly population requires more medical services, and among computer and mathematical science occupations, as organizations continue to use information technology to improve efficiency and reduce costs. Over the decade, occupations classified into education or training categories that involve a postsecondary award or degree will see faster employment growth than occupations in categories that involve on-the-job training. Most job openings, however, will occur among occupations in the on-the-job training categories. Of the 50.9 million total job openings that are expected to arise over the 2008–18 period, it is estimated that 34.3 million will result from replacement needs. By comparison, it is estimated that a net increase of 15.3 million jobs will result from economic growth.¹⁰ □

Notes

¹ BLS makes assumptions about the factors that affect occupational growth. Detailed information on these projections can be found at the Employment Projections Program section of the BLS Web site at www.bls.gov/emp/ (visited Oct. 29, 2009), and in the *BLS Handbook of Methods*, on the Internet at www.bls.gov/opub/hom/homch13_a.htm (visited Oct. 29, 2009). The projections will also be presented in the forthcoming 2010–11 *Occupational Outlook Handbook*. The Internet version of this edition of the *Handbook*, which will be accessible at

www.bls.gov/oco/ (visited Oct. 29, 2009), is expected to be available in late December 2009; the print version of the 2010–11 *Handbook*, BLS Bulletin 2800, is expected to be available by the spring of 2010.

² See Mitra Toossi, “Labor force projections to 2018: older workers staying more active,” this issue, pp. 30–51.

³ See Ian D. Wyatt and Kathryn J. Byun, “The U.S. economy to 2018: from recession to recovery,” this issue, pp. 11–29.

⁴ See Wyatt and Byun, “The U.S. economy to 2018.”

⁵ The Standard Occupational Classification (SOC) system broadly classifies occupations into 23 major occupational groups. This article uses an aggregation of the 23 major groups, referred to as the SOC intermediate aggregation, which comprises 11 groups. The groupings of management, business, and financial occupations; professional and related occupations; and service occupations are part of the intermediate aggregation, and they are made up of some of the 23 major occupational groups. Military specific occupations are excluded; they stand alone as 1 of the the 23 major groups and are also their own group in the the intermediate aggregation. For more information on the SOC, see *Standard Occupation Classification Manual 2000* (Lanham, MD, Bernan Associates, 2000).

⁶ See Rose A. Woods, “Industry output and employment projections to 2018,” this issue, pp. 52–81. The employment figures for the 2007–08 period that are referenced here describe industry sector 23—construction—in the North American Industry Classification System (NAICS). A substantial portion of the jobs in the construction and extraction occupational group are within the construction industry sector.

⁷ These data come from the BLS Current Employment Statistics program. The data referenced describe the NAICS manufacturing industry sector, which is composed of NAICS industries 31–33.

⁸ Because of the variability of job functions within a given occupation,

and because different employers may have different requirements for education or training, workers in the same occupation can have substantially different education and training backgrounds. For more information on education and training categories and the educational attainment of workers in various occupations, see *Occupational Projections and Training Data*, 2008–09 edition, Bulletin 2702 (Bureau of Labor Statistics), on the Internet at www.bls.gov/emp/optd (visited Dec. 8, 2009); and the technical documentation accompanying the 2008–18 employment projections, available on the Internet at www.bls.gov/emp/ep_education_tech.htm (visited Dec. 8, 2009).

⁹ For a detailed discussion of the methods used to determine replacement needs, as well as data on replacement needs for all occupations, see *Occupational Projections and Training Data*, 2008–09 edition; and the technical documentation accompanying the 2008–18 employment projections, available on the Internet at www.bls.gov/emp/ep_replacements.htm (visited Dec. 8, 2009).

¹⁰ Total job openings may not equal the sum of replacement needs and employment change. If employment change for a detailed occupation is negative, job openings due to growth are zero and total job openings equals replacement needs. For summary occupations, including the total of all occupations, job openings due to growth are summed from detailed occupations. If some detailed occupations are declining and others are growing, job openings due to growth will not equal the employment change.

Appendix: Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008-18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
00-0000	Total, all occupations.....	150,931.7	166,205.6	100.0	100.0	15,273.9	10.1	50,928.5
11-1300	Management, business, and financial occupations ²	15,746.7	17,410.9	10.4	10.5	1,664.2	10.6	5,034.7
11-0000	Management occupations.....	8,912.4	9,366.6	5.9	5.6	454.3	5.1	2,459.5
11-1000	Top executives.....	2,201.1	2,193.7	1.5	1.3	-7.4	-3	634.4
11-1011	Chief executives.....	400.4	394.9	.3	.2	-5.5	-1.4	112.5
11-1021	General and operations managers.....	1,733.1	1,730.8	1.1	1.0	-2.3	-1	502.2
11-1031	Legislators.....	67.6	68.1	.0	.0	.5	.7	19.7
11-2000	Advertising, marketing, promotions, public relations, and sales managers.....	623.8	704.1	.4	.4	80.3	12.9	217.3
11-2011	Advertising and promotions managers.....	44.6	43.9	.0	.0	-8	-1.7	10.5
11-2020	Marketing and sales managers.....	522.4	596.2	.3	.4	73.7	14.1	186.3
11-2021	Marketing managers.....	175.6	197.5	.1	.1	21.9	12.5	59.7
11-2022	Sales managers.....	346.9	398.7	.2	.2	51.8	14.9	126.6
11-2031	Public relations managers.....	56.7	64.1	.0	.0	7.3	12.9	20.6
11-3000	Operations specialties managers.....	1,551.7	1,671.5	1.0	1.0	119.9	7.7	466.6
11-3011	Administrative services managers.....	259.4	291.7	.2	.2	32.3	12.5	86.6
11-3021	Computer and information systems managers.....	293.0	342.5	.2	.2	49.5	16.9	97.1
11-3031	Financial managers.....	539.3	580.5	.4	.3	41.2	7.6	138.2
11-3040	Human resources managers.....	133.9	146.8	.1	.1	12.9	9.6	41.4
11-3041	Compensation and benefits managers.....	40.5	43.9	.0	.0	3.4	8.5	12.1
11-3042	Training and development managers.....	30.4	34.0	.0	.0	3.6	11.9	10.1
11-3049	All other human resources managers.....	63.1	68.9	.0	.0	5.8	9.2	19.3
11-3051	Industrial production managers.....	156.1	144.1	.1	.1	-11.9	-7.6	54.7
11-3061	Purchasing managers.....	70.3	71.4	.0	.0	1.1	1.5	21.1
11-3071	Transportation, storage, and distribution managers.....	99.7	94.4	.1	.1	-5.2	-5.3	27.4
11-9000	Other management occupations.....	4,535.8	4,797.3	3.0	2.9	261.4	5.8	1,141.2
11-9010	Agricultural managers.....	1,234.0	1,169.4	.8	.7	-64.6	-5.2	125.2
11-9011	Farm, ranch, and other agricultural managers.....	248.1	262.7	.2	.2	14.6	5.9	64.9
11-9012	Farmers and ranchers.....	985.9	906.7	.7	.5	-79.2	-8.0	60.3
11-9021	Construction managers.....	551.0	645.8	.4	.4	94.8	17.2	137.7
11-9030	Education administrators.....	445.4	482.5	.3	.3	37.0	8.3	170.4
11-9031	Education administrators, preschool and child care center/program.....	58.9	65.8	.0	.0	6.9	11.8	24.6
11-9032	Education administrators, elementary and secondary school.....	230.6	250.4	.2	.2	19.8	8.6	88.8
11-9033	Education administrators, postsecondary.....	124.6	127.4	.1	.1	2.8	2.3	40.1
11-9039	Education administrators, all other.....	31.4	38.9	.0	.0	7.5	23.9	16.9
11-9041	Engineering managers.....	184.0	195.4	.1	.1	11.3	6.2	48.7
11-9051	Food service managers.....	338.7	356.7	.2	.2	18.0	5.3	83.7
11-9061	Funeral directors.....	30.0	33.6	.0	.0	3.6	11.9	9.6
11-9071	Gaming managers.....	6.2	6.9	.0	.0	.7	11.8	20.0
11-9081	Lodging managers.....	59.8	62.6	.0	.0	2.8	4.7	15.6
11-9111	Medical and health services managers.....	283.5	328.8	.2	.2	45.4	16.0	99.4
11-9121	Natural sciences managers.....	44.6	51.5	.0	.0	6.9	15.5	2.1
11-9131	Postmasters and mail superintendents.....	25.6	21.7	.0	.0	-3.9	-15.1	5.2
11-9141	Property, real estate, and community association managers.....	304.1	329.7	.2	.2	25.6	8.4	78.0
11-9151	Social and community service managers.....	130.6	148.6	.1	.1	18.0	13.8	48.2
11-9199	All other managers.....	898.2	964.0	.6	.6	65.8	7.3	297.5
13-0000	Business and financial operations occupations.....	6,834.4	8,044.3	4.5	4.8	1,209.9	17.7	2,575.2

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
13–1000	Business operations specialists	4,042.7	4,762.1	2.7	2.9	719.5	17.8	1,609.0
13–1011	Agents and business managers of artists, performers, and athletes	22.7	27.8	.0	.0	5.1	22.4	10.1
13–1020	Buyers and purchasing agents.....	457.1	494.5	.3	.3	37.4	8.2	158.7
13–1021	Purchasing agents and buyers, farm products.....	14.1	14.0	.0	.0	–2	–1.1	3.1
13–1022	Wholesale and retail buyers, except farm products	147.7	144.4	.1	.1	–3.3	–2.2	37.0
13–1023	Purchasing agents, except wholesale, retail, and farm products.....	295.2	336.1	.2	.2	40.9	13.9	118.6
13–1030	Claims adjusters, appraisers, examiners, and investigators.....	306.3	327.2	.2	.2	20.9	6.8	98.6
13–1031	Claims adjusters, examiners, and investigators.....	294.6	315.5	.2	.2	20.9	7.1	95.6
13–1032	Insurance appraisers, auto damage	11.7	11.7	.0	.0	.1	.5	3.0
13–1041	Compliance officers, except agriculture, construction, health and safety, and transportation.....	260.2	341.0	.2	.2	80.8	31.0	108.5
13–1051	Cost estimators.....	217.8	272.9	.1	.2	55.2	25.3	103.6
13–1061	Emergency management specialists.....	12.8	15.6	.0	.0	2.8	21.7	5.6
13–1070	Human resources, training, and labor relations specialists	770.9	955.5	.5	.6	184.5	23.9	385.8
13–1071	Employment, recruitment, and placement specialists.....	207.9	265.9	.1	.2	58.0	27.9	112.3
13–1072	Compensation, benefits, and job analysis specialists.....	121.9	150.6	.1	.1	28.7	23.6	60.5
13–1073	Training and development specialists.....	216.6	267.1	.1	.2	50.5	23.3	107.1
13–1079	Human resources, training, and labor relations specialists, all other	224.6	271.9	.1	.2	47.2	21.0	105.9
13–1081	Logisticians.....	100.4	120.0	.1	.1	19.6	19.5	41.9
13–1111	Management analysts.....	746.9	925.2	.5	.6	178.3	23.9	306.5
13–1121	Meeting and convention planners	56.6	65.4	.0	.0	8.8	15.6	21.4
13–1199	Business operation specialists, all other	1,091.1	1,217.0	.7	.7	125.9	11.5	368.3
13–2000	Financial specialists	2,791.7	3,282.2	1.8	2.0	490.5	17.6	966.2
13–2011	Accountants and auditors	1,290.6	1,570.0	.9	.9	279.4	21.6	497.5
13–2021	Appraisers and assessors of real estate.....	92.4	96.6	.1	.1	4.2	4.6	21.0
13–2031	Budget analysts	67.2	77.4	.0	.0	10.1	15.1	22.3
13–2041	Credit analysts.....	73.2	84.2	.0	.1	11.0	15.0	24.3
13–2050	Financial analysts and advisors.....	562.0	670.2	.4	.4	108.2	19.2	210.4
13–2051	Financial analysts	250.6	300.3	.2	.2	49.6	19.8	95.2
13–2052	Personal financial advisors.....	208.4	271.2	.1	.2	62.8	30.1	85.3
13–2053	Insurance underwriters.....	102.9	98.7	.1	.1	–4.3	–4.1	30.0
13–2061	Financial examiners.....	27.0	38.1	.0	.0	11.1	41.2	16.0
13–2070	Loan counselors and officers	360.2	398.5	.2	.2	38.3	10.6	77.6
13–2071	Loan counselors.....	32.4	37.6	.0	.0	5.3	16.3	8.8
13–2072	Loan officers.....	327.8	360.9	.2	.2	33.0	10.1	68.8
13–2080	Tax examiners, collectors, preparers, and revenue agents	168.5	180.8	.1	.1	12.3	7.3	53.7
13–2081	Tax examiners, collectors, and revenue agents.....	72.7	82.2	.0	.0	9.5	13.0	35.2
13–2082	Tax preparers.....	95.8	98.6	.1	.1	2.8	2.9	18.5
13–2099	All other financial specialists	150.6	166.4	.1	.1	15.8	10.5	43.2
15–2900	Professional and related occupations ³	31,053.5	36,280.0	20.6	21.8	5,226.5	16.8	11,923.4
15–0000	Computer and mathematical science occupations.....	3,540.4	4,326.1	2.3	2.6	785.7	22.2	1,440.5
15–1000	Computer specialists.....	3,424.3	4,187.0	2.3	2.5	762.7	22.3	1,383.6

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
15–1011	Computer and information scientists, research.....	28.9	35.9	0.0	0.0	7.0	24.2	13.2
15–1021	Computer programmers.....	426.7	414.4	.3	.2	-12.3	-2.9	80.3
15–1030	Computer software engineers.....	909.6	1,204.8	.6	.7	295.2	32.5	371.7
15–1031	Computer software engineers, applications.....	514.8	689.9	.3	.4	175.1	34.0	218.4
15–1032	Computer software engineers, systems software.....	394.8	515.0	.3	.3	120.2	30.4	153.4
15–1041	Computer support specialists.....	565.7	643.7	.4	.4	78.0	13.8	234.6
15–1051	Computer systems analysts.....	532.2	640.3	.4	.4	108.1	20.3	222.8
15–1061	Database administrators.....	120.4	144.7	.1	.1	24.4	20.3	44.4
15–1071	Network and computer systems administrators.....	339.5	418.4	.2	.3	78.9	23.2	135.5
15–1081	Network systems and data communications analysts.....	292.0	447.8	.2	.3	155.8	53.4	208.3
15–1099	All other computer specialists.....	209.3	236.8	.1	.1	27.5	13.1	72.6
15–2000	Mathematical science occupations.....	116.1	139.1	.1	.1	23.0	19.8	56.9
15–2011	Actuaries.....	19.7	23.9	.0	.0	4.2	21.4	10.0
15–2021	Mathematicians.....	2.9	3.6	.0	.0	.7	22.5	1.5
15–2031	Operations research analysts.....	63.0	76.9	.0	.0	13.9	22.0	32.2
15–2041	Statisticians.....	22.6	25.5	.0	.0	2.9	13.1	9.6
15–2090	Miscellaneous mathematical science occupations..	7.8	9.1	.0	.0	1.3	16.2	3.6
15–2091	Mathematical technicians.....	1.2	1.3	.0	.0	.1	8.5	.5
15–2099	Mathematical scientists, all other.....	6.6	7.8	.0	.0	1.2	17.6	3.1
17–0000	Architecture and engineering occupations.....	2,636.0	2,906.6	1.7	1.7	270.6	10.3	837.6
17–1000	Architects, surveyors, and cartographers.....	237.9	278.0	.2	.2	40.1	16.8	86.3
17–1010	Architects, except naval.....	167.9	196.1	.1	.1	28.2	16.8	56.5
17–1011	Architects, except landscape and naval.....	141.2	164.2	.1	.1	22.9	16.2	46.8
17–1012	Landscape architects.....	26.7	32.0	.0	.0	5.3	19.7	9.8
17–1020	Surveyors, cartographers, and photogrammetrists.....	70.0	81.8	.0	.0	11.9	17.0	29.7
17–1021	Cartographers and photogrammetrists.....	12.3	15.6	.0	.0	3.3	26.8	6.4
17–1022	Surveyors.....	57.6	66.2	.0	.0	8.6	14.9	23.3
17–2000	Engineers.....	1,571.9	1,750.3	1.0	1.1	178.3	11.3	531.3
17–2011	Aerospace engineers.....	71.6	79.1	.0	.0	7.4	10.4	22.3
17–2021	Agricultural engineers.....	2.7	3.0	.0	.0	.3	12.1	.9
17–2031	Biomedical engineers.....	16.0	27.6	.0	.0	11.6	72.0	14.9
17–2041	Chemical engineers.....	31.7	31.0	.0	.0	-6	-2.0	7.8
17–2051	Civil engineers.....	278.4	345.9	.2	.2	67.6	24.3	114.6
17–2061	Computer hardware engineers.....	74.7	77.5	.0	.0	2.8	3.8	23.5
17–2070	Electrical and electronics engineers.....	301.5	304.6	.2	.2	3.1	1.0	72.3
17–2071	Electrical engineers.....	157.8	160.5	.1	.1	2.7	1.7	38.9
17–2072	Electronics engineers, except computer.....	143.7	144.1	.1	.1	.4	.3	33.4
17–2081	Environmental engineers.....	54.3	70.9	.0	.0	16.6	30.6	27.9
17–2110	Industrial engineers, including health and safety.....	240.4	273.7	.2	.2	33.2	13.8	94.6
17–2111	Health and safety engineers, except mining safety engineers and inspectors.....	25.7	28.3	.0	.0	2.6	10.3	9.2
17–2112	Industrial engineers.....	214.8	245.3	.1	.1	30.6	14.2	85.4
17–2121	Marine engineers and naval architects.....	8.5	9.0	.0	.0	.5	5.8	2.3
17–2131	Materials engineers.....	24.4	26.6	.0	.0	2.3	9.3	8.1
17–2141	Mechanical engineers.....	238.7	253.1	.2	.2	14.4	6.0	75.7
17–2151	Mining and geological engineers, including mining safety engineers.....	7.1	8.2	.0	.0	1.1	15.3	2.6
17–2161	Nuclear engineers.....	16.9	18.8	.0	.0	1.9	10.9	5.4
17–2171	Petroleum engineers.....	21.9	25.9	.0	.0	4.0	18.4	8.6
17–2199	All other engineers.....	183.2	195.4	.1	.1	12.2	6.7	50.2
17–3000	Drafters, engineering, and mapping technicians.....	826.2	878.3	.5	.5	52.2	6.3	220.0

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
17–3010	Drafters	251.9	262.5	0.2	0.2	10.7	4.2	65.6
17–3011	Architectural and civil drafters	118.4	129.1	.1	.1	10.8	9.1	36.2
17–3012	Electrical and electronics drafters	33.6	33.9	.0	.0	.3	.8	7.5
17–3013	Mechanical drafters	78.7	77.8	.1	.0	–.9	–1.1	16.9
17–3019	Drafters, all other	21.2	21.7	.0	.0	.5	2.3	5.1
17–3020	Engineering technicians, except drafters	497.3	523.1	.3	.3	25.8	5.2	124.9
17–3021	Aerospace engineering and operations technicians	8.7	8.9	.0	.0	.2	2.3	1.8
17–3022	Civil engineering technicians	91.7	107.2	.1	.1	15.5	16.9	32.8
17–3023	Electrical and electronic engineering technicians	164.0	160.4	.1	.1	–3.6	–2.2	31.0
17–3024	Electro-mechanical technicians	16.4	15.6	.0	.0	–.8	–4.9	3.1
17–3025	Environmental engineering technicians	21.2	27.5	.0	.0	6.4	30.1	10.4
17–3026	Industrial engineering technicians	72.6	77.4	.0	.0	4.8	6.6	18.5
17–3027	Mechanical engineering technicians	46.1	45.5	.0	.0	–.7	–1.5	8.7
17–3029	Engineering technicians, except drafters, all other	76.6	80.6	.1	.0	4.0	5.2	18.5
17–3031	Surveying and mapping technicians	77.0	92.7	.1	.1	15.7	20.4	29.4
19–0000	Life, physical, and social science occupations	1,460.8	1,738.0	1.0	1.0	277.2	19.0	714.6
19–1000	Life scientists	279.4	354.1	.2	.2	74.6	26.7	143.7
19–1010	Agricultural and food scientists	31.0	35.9	.0	.0	4.8	15.6	15.7
19–1011	Animal scientists	3.7	4.2	.0	.0	.5	13.1	1.8
19–1012	Food scientists and technologists	13.4	15.6	.0	.0	2.2	16.3	6.9
19–1013	Soil and plant scientists	13.9	16.1	.0	.0	2.2	15.5	7.0
19–1020	Biological scientists	91.3	110.5	.1	.1	19.2	21.0	48.5
19–1021	Biochemists and biophysicists	23.2	31.9	.0	.0	8.7	37.4	16.2
19–1022	Microbiologists	16.9	18.9	.0	.0	2.1	12.2	7.5
19–1023	Zoologists and wildlife biologists	19.5	22.0	.0	.0	2.5	12.8	8.8
19–1029	Biological scientists, all other	31.7	37.6	.0	.0	5.9	18.8	16.1
19–1030	Conservation scientists and foresters	29.8	33.4	.0	.0	3.6	12.0	6.8
19–1031	Conservation scientists	18.3	20.5	.0	.0	2.2	11.9	4.1
19–1032	Foresters	11.5	12.9	.0	.0	1.4	12.1	2.6
19–1040	Medical scientists	114.2	159.1	.1	.1	44.9	39.3	67.9
19–1041	Epidemiologists	4.8	5.5	.0	.0	.7	15.1	1.7
19–1042	Medical scientists, except epidemiologists	109.4	153.6	.1	.1	44.2	40.4	66.2
19–1099	All other life scientists	13.1	15.2	.0	.0	2.1	16.3	4.8
19–2000	Physical scientists	275.5	317.2	.2	.2	41.7	15.1	123.0
19–2010	Astronomers and physicists	17.1	19.8	.0	.0	2.7	15.9	7.6
19–2011	Astronomers	1.5	1.7	.0	.0	.2	16.0	.7
19–2012	Physicists	15.6	18.1	.0	.0	2.5	15.9	6.9
19–2021	Atmospheric and space scientists	9.4	10.8	.0	.0	1.4	14.7	3.3
19–2030	Chemists and materials scientists	94.1	97.3	.1	.1	3.3	3.5	34.4
19–2031	Chemists	84.3	86.4	.1	.1	2.1	2.5	30.0
19–2032	Materials scientists	9.7	10.9	.0	.0	1.2	11.9	4.4
19–2040	Environmental scientists and geoscientists	127.6	158.9	.1	.1	31.3	24.5	67.6
19–2041	Environmental scientists and specialists, including health	85.9	109.8	.1	.1	23.9	27.9	48.4
19–2042	Geoscientists, except hydrologists and geographers	33.6	39.4	.0	.0	5.9	17.5	15.4
19–2043	Hydrologists	8.1	9.6	.0	.0	1.5	18.3	3.8
19–2099	All other physical scientists	27.4	30.4	.0	.0	3.0	11.1	10.1
19–3000	Social scientists and related occupations	549.4	666.1	.4	.4	116.7	21.3	275.1
19–3011	Economists	14.6	15.5	.0	.0	.9	5.8	5.0

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
19–3020	Market and survey researchers.....	273.2	350.5	0.2	0.2	77.2	28.3	150.7
19–3021	Market research analysts.....	249.8	319.9	.2	.2	70.1	28.1	137.3
19–3022	Survey researchers.....	23.4	30.5	.0	.0	7.1	30.4	13.4
19–3030	Psychologists.....	170.2	190.0	.1	.1	19.7	11.6	68.0
19–3031	Clinical, counseling, and school psychologists	152.0	168.8	.1	.1	16.8	11.1	59.9
19–3032	Industrial-organizational psychologists.....	2.3	2.9	.0	.0	.6	26.3	1.3
19–3039	Psychologists, all other.....	15.9	18.3	.0	.0	2.3	14.4	6.8
19–3041	Sociologists.....	4.9	6.0	.0	.0	1.1	21.9	2.0
19–3051	Urban and regional planners.....	38.4	45.7	.0	.0	7.3	19.0	14.7
19–3090	Miscellaneous social scientists and related workers	47.9	58.5	.0	.0	10.6	22.0	34.6
19–3091	Anthropologists and archeologists	5.8	7.4	.0	.0	1.6	28.1	4.5
19–3092	Geographers	1.3	1.6	.0	.0	.3	26.2	1.0
19–3093	Historians	4.1	4.5	.0	.0	.5	11.5	2.5
19–3094	Political scientists	40.1	4.9	.0	.0	.8	19.5	2.8
19–3099	Social scientists and related workers, all other.....	32.8	40.1	.0	.0	7.4	22.4	23.8
19–4000	Life, physical, and social science technicians	356.5	400.7	.2	.2	44.1	12.4	172.9
19–4011	Agricultural and food science technicians.....	21.9	23.8	.0	.0	1.9	8.8	9.6
19–4021	Biological technicians.....	79.5	93.5	.1	.1	14.0	17.6	41.9
19–4031	Chemical technicians	66.1	65.5	.0	.0	-.5	-.8	13.3
19–4041	Geological and petroleum technicians.....	15.2	15.4	.0	.0	.2	1.5	5.5
19–4051	Nuclear technicians.....	6.4	7.0	.0	.0	.6	9.2	2.8
19–4061	Social science research assistants	21.0	24.7	.0	.0	3.7	17.8	12.7
19–4090	Other life, physical, and social science technicians ..	146.5	170.7	.1	.1	24.2	16.5	87.1
19–4091	Environmental science and protection technicians, including health	35.0	45.2	.0	.0	10.1	28.9	25.2
19–4092	Forensic science technicians.....	12.8	15.3	.0	.0	2.5	19.6	8.0
19–4093	Forest and conservation technicians	34.0	36.9	.0	.0	2.9	8.6	17.5
19–4099	Life, physical, and social science technicians, all other.....	64.7	73.3	.0	.0	8.6	13.3	36.4
21–0000	Community and social services occupations.....	2,723.7	3,172.1	1.8	1.9	448.4	16.5	1,032.6
21–1000	Counselors, social workers, and other community and social service specialists.....	1,944.9	2,294.5	1.3	1.4	349.7	18.0	780.4
21–1010	Counselors.....	665.5	782.2	.4	.5	116.8	17.5	251.3
21–1011	Substance abuse and behavioral disorder counselors	86.1	104.2	.1	.1	18.1	21.0	35.5
21–1012	Educational, vocational, and school counselors....	275.8	314.4	.2	.2	38.6	14.0	94.4
21–1013	Marriage and family therapists	27.3	31.3	.0	.0	3.9	14.5	9.5
21–1014	Mental health counselors.....	113.3	140.4	.1	.1	27.2	24.0	50.1
21–1015	Rehabilitation counselors	129.5	154.1	.1	.1	24.5	18.9	50.7
21–1019	Counselors, all other.....	33.4	37.8	.0	.0	4.4	13.1	11.1
21–1020	Social workers	642.0	745.4	.4	.4	103.4	16.1	264.6
21–1021	Child, family, and school social workers.....	292.6	328.7	.2	.2	36.1	12.3	109.6
21–1022	Medical and public health social workers.....	138.7	169.8	.1	.1	31.1	22.4	65.9
21–1023	Mental health and substance abuse social workers	137.3	164.1	.1	.1	26.8	19.5	61.3
21–1029	Social workers, all other	73.4	82.8	.0	.0	9.4	12.8	27.8
21–1090	Miscellaneous community and social service specialists	637.4	767.0	.4	.5	129.6	20.3	264.5
21–1091	Health educators	66.2	78.2	.0	.0	12.0	18.1	26.0
21–1092	Probation officers and correctional treatment specialists.....	103.4	123.3	.1	.1	19.9	19.3	41.8
21–1093	Social and human service assistants.....	352.0	431.5	.2	.3	79.4	22.6	153.9

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
21–1099	Community and social service specialists, all other	115.8	134.0	0.1	0.1	18.2	15.7	42.7
21–2000	Religious workers	778.8	877.6	.5	.5	98.8	12.7	252.2
21–2011	Clergy	670.1	755.2	.4	.5	85.1	12.7	217.7
21–2021	Directors, religious activities and education.....	80.4	90.6	.1	.1	10.2	12.6	26.4
21–2099	Religious workers, all other	28.3	31.8	.0	.0	3.5	12.5	8.1
23–0000	Legal occupations.....	1,251.0	1,439.4	.8	.9	188.4	15.1	397.1
23–1000	Lawyers, judges, and related workers	810.4	910.8	.5	.5	100.4	12.4	252.5
23–1011	Lawyers.....	759.2	857.7	.5	.5	98.5	13.0	240.4
23–1020	Judges, magistrates, and other judicial workers	51.2	53.1	.0	.0	1.8	3.6	12.1
23–1021	Administrative law judges, adjudicators, and hearing officers.....	14.4	15.5	.0	.0	1.2	8.0	3.8
23–1022	Arbitrators, mediators, and conciliators.....	9.9	11.3	.0	.0	1.4	13.9	3.2
23–1023	Judges, magistrate judges, and magistrates.....	26.9	26.2	.0	.0	–.7	–2.6	5.0
23–2000	Legal support workers.....	440.6	528.7	.3	.3	88.1	20.0	144.6
23–2011	Paralegals and legal assistants.....	263.8	337.9	.2	.2	74.1	28.1	104.0
23–2090	Miscellaneous legal support workers.....	176.8	190.8	.1	.1	14.0	7.9	40.6
23–2091	Court reporters.....	21.5	25.4	.0	.0	3.9	18.3	7.1
23–2092	Law clerks.....	37.7	42.9	.0	.0	5.2	13.9	10.8
23–2093	Title examiners, abstractors, and searchers.....	69.5	69.0	.0	.0	–.5	–.7	10.3
23–2099	Legal support workers, all other	48.1	53.4	.0	.0	5.3	11.0	12.4
25–0000	Education, training, and library occupations	9,209.5	10,533.6	6.1	6.3	1,324.1	14.4	3,331.7
25–1000	Postsecondary teachers	1,699.2	1,956.1	1.1	1.2	256.9	15.1	552.9
25–2000	Primary, secondary, and special education teachers...	4,521.5	5,168.8	3.0	3.1	647.3	14.3	1,748.4
25–2010	Preschool and kindergarten teachers	636.8	750.4	.4	.5	113.6	17.8	241.3
25–2011	Preschool teachers, except special education.....	457.2	543.9	.3	.3	86.7	19.0	178.3
25–2012	Kindergarten teachers, except special education.....	179.5	206.5	.1	.1	27.0	15.0	63.0
25–2020	Elementary and middle school teachers.....	2,224.6	2,570.5	1.5	1.5	345.9	15.5	851.7
25–2021	Elementary school teachers, except special education.....	1,549.5	1,793.7	1.0	1.1	244.2	15.8	596.5
25–2022	Middle school teachers, except special and vocational education.....	659.5	760.6	.4	.5	101.2	15.3	251.1
25–2023	Vocational education teachers, middle school	15.6	16.1	.0	.0	.5	3.2	4.1
25–2030	Secondary school teachers	1,187.2	1,293.1	.8	.8	105.9	8.9	450.8
25–2031	Secondary school teachers, except special and vocational education.....	1,087.7	1,184.1	.7	.7	96.3	8.9	412.4
25–2032	Vocational education teachers, secondary school	99.4	109.0	.1	.1	9.6	9.6	38.5
25–2040	Special education teachers	473.0	554.9	.3	.3	81.9	17.3	204.6
25–2041	Special education teachers, preschool, kindergarten, and elementary school.....	226.0	270.3	.1	.2	44.3	19.6	102.9
25–2042	Special education teachers, middle school	100.3	118.4	.1	.1	18.1	18.1	44.1
25–2043	Special education teachers, secondary school.....	146.7	166.2	.1	.1	19.5	13.3	57.5
25–3000	Other teachers and instructors.....	1,099.3	1,305.5	.7	.8	206.2	18.8	375.2
25–3011	Adult literacy, remedial education, and GED teachers and instructors	96.0	110.4	.1	.1	14.5	15.1	29.2
25–3021	Self-enrichment education teachers	253.6	334.9	.2	.2	81.3	32.0	120.3
25–3099	Teachers and instructors, all other.....	749.7	860.1	.5	.5	110.4	14.7	225.7
25–4000	Librarians, curators, and archivists	309.6	338.6	.2	.2	29.0	9.4	133.8
25–4010	Archivists, curators, and museum technicians.....	29.1	35.0	.0	.0	5.9	20.4	14.6
25–4011	Archivists	6.3	6.7	.0	.0	.4	6.5	2.3
25–4012	Curators	11.7	14.4	.0	.0	2.7	23.0	6.2
25–4013	Museum technicians and conservators	11.1	13.9	.0	.0	2.8	25.6	6.1
25–4021	Librarians	159.9	172.4	.1	.1	12.5	7.8	54.5

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
25–4031	Library technicians.....	120.6	131.2	0.1	0.1	10.6	8.8	64.7
25–9000	Other education, training, and library occupations....	1,579.8	1,764.6	1.0	1.1	184.7	11.7	521.3
25–9011	Audio-visual collections specialists.....	6.8	7.5	.0	.0	.7	10.3	2.2
25–9021	Farm and home management advisors.....	13.1	13.2	.0	.0	.2	1.2	3.0
25–9031	Instructional coordinators.....	133.9	165.0	.1	.1	31.1	23.2	60.6
25–9041	Teacher assistants.....	1,312.7	1,447.6	.9	.9	134.9	10.3	412.7
25–9099	Education, training, and library workers, all other....	113.3	131.2	.1	.1	17.9	15.8	42.9
27–0000	Arts, design, entertainment, sports, and media occupations.....	2,740.9	3,073.4	1.8	1.8	332.6	12.1	1,030.0
27–1000	Art and design occupations.....	834.0	922.1	.6	.6	88.1	10.6	327.7
27–1010	Artists and related workers.....	221.9	247.7	.1	.1	25.8	11.6	75.5
27–1011	Art directors.....	84.2	94.0	.1	.1	9.8	11.7	28.7
27–1012	Craft artists.....	13.6	14.6	.0	.0	1.0	7.2	4.0
27–1013	Fine artists, including painters, sculptors, and illustrators.....	23.6	25.7	.0	.0	2.1	9.0	7.4
27–1014	Multi-media artists and animators.....	79.0	90.2	.1	.1	11.2	14.2	28.9
27–1019	Artists and related workers, all other.....	21.5	23.2	.0	.0	1.7	7.9	6.5
27–1020	Designers.....	612.1	674.4	.4	.4	62.3	10.2	252.2
27–1021	Commercial and industrial designers.....	44.3	48.3	.0	.0	4.0	9.0	17.6
27–1022	Fashion designers.....	22.7	22.9	.0	.0	.2	.8	7.2
27–1023	Floral designers.....	76.1	74.2	.1	.0	-1.9	-2.5	23.4
27–1024	Graphic designers.....	286.1	323.1	.2	.2	36.9	12.9	124.8
27–1025	Interior designers.....	71.7	85.6	.0	.1	13.9	19.4	35.9
27–1026	Merchandise displayers and window trimmers.....	85.2	91.2	.1	.1	6.0	7.1	32.2
27–1027	Set and exhibit designers.....	10.9	12.7	.0	.0	1.8	16.6	5.1
27–1029	Designers, all other.....	15.0	16.5	.0	.0	1.5	9.6	6.1
27–2000	Entertainers and performers, sports and related occupations.....	740.7	845.3	.5	.5	104.6	14.1	274.3
27–2010	Actors, producers, and directors.....	155.1	172.0	.1	.1	16.9	10.9	61.2
27–2011	Actors.....	56.5	63.7	.0	.0	7.2	12.8	20.8
27–2012	Producers and directors.....	98.6	108.3	.1	.1	9.7	9.8	40.4
27–2020	Athletes, coaches, umpires, and related workers.....	258.1	317.7	.2	.2	59.6	23.1	109.0
27–2021	Athletes and sports competitors.....	16.5	18.4	.0	.0	1.9	11.8	5.1
27–2022	Coaches and scouts.....	225.7	281.7	.1	.2	56.0	24.8	99.2
27–2023	Umpires, referees, and other sports officials.....	15.9	17.6	.0	.0	1.7	10.4	4.7
27–2030	Dancers and choreographers.....	29.2	30.9	.0	.0	1.7	6.0	15.1
27–2031	Dancers.....	13.0	13.9	.0	.0	.9	6.8	6.9
27–2032	Choreographers.....	16.2	17.0	.0	.0	.9	5.3	8.3
27–2040	Musicians, singers, and related workers.....	240.0	259.6	.2	.2	19.6	8.2	68.0
27–2041	Music directors and composers.....	53.6	59.0	.0	.0	5.3	10.0	16.2
27–2042	Musicians and singers.....	186.4	200.6	.1	.1	14.2	7.6	51.9
27–2099	All other entertainers and performers, sports and related workers.....	58.2	65.1	.0	.0	6.8	11.8	20.8
27–3000	Media and communication occupations.....	827.2	932.5	.5	.6	105.2	12.7	310.7
27–3010	Announcers.....	67.4	65.0	.0	.0	-2.4	-3.5	19.9
27–3011	Radio and television announcers.....	55.1	51.7	.0	.0	-3.4	-6.1	15.5
27–3012	Public address system and other announcers.....	12.3	13.3	.0	.0	1.0	8.2	4.5
27–3020	News analysts, reporters and correspondents.....	69.3	64.9	.0	.0	-4.4	-6.3	19.3
27–3021	Broadcast news analysts.....	7.7	8.0	.0	.0	.3	4.1	2.4
27–3022	Reporters and correspondents.....	61.6	56.9	.0	.0	-4.7	-7.6	16.9
27–3031	Public relations specialists.....	275.2	341.3	.2	.2	66.2	24.0	131.3
27–3040	Writers and editors.....	330.2	361.1	.2	.2	30.9	9.4	105.0

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
27–3041	Editors.....	129.6	129.2	0.1	0.1	–0.4	–0.3	33.9
27–3042	Technical writers.....	48.9	57.8	.0	.0	8.9	18.2	16.8
27–3043	Writers and authors.....	151.7	174.1	.1	.1	22.5	14.8	54.2
27–3090	Miscellaneous media and communications workers	85.2	100.1	.1	.1	14.9	17.4	35.1
27–3091	Interpreters and translators.....	50.9	62.2	.0	.0	11.3	22.2	23.4
27–3099	All other media and communication workers.....	34.3	37.9	.0	.0	3.6	10.4	11.7
27–4000	Media and communication equipment occupations .	339.0	373.6	.2	.2	34.5	10.2	117.4
27–4010	Broadcast and sound engineering technicians and radio operators.....	114.6	123.6	.1	.1	9.0	7.8	43.6
27–4011	Audio and video equipment technicians.....	55.4	62.4	.0	.0	7.0	12.6	23.7
27–4012	Broadcast technicians.....	38.8	39.4	.0	.0	.7	1.8	12.4
27–4013	Radio operators.....	1.0	1.1	.0	.0	.1	9.0	.4
27–4014	Sound engineering technicians.....	19.5	20.7	.0	.0	1.2	6.3	7.1
27–4021	Photographers.....	152.0	169.5	.1	.1	17.5	11.5	48.0
27–4030	Television, video, and motion picture camera operators and editors.....	51.9	57.3	.0	.0	5.4	10.5	18.2
27–4031	Camera operators, television, video, and motion picture.....	26.3	28.8	.0	.0	2.4	9.2	8.9
27–4032	Film and video editors.....	25.5	28.6	.0	.0	3.0	11.9	9.3
27–4099	All other media and communication equipment workers.....	20.6	23.1	.0	.0	2.6	12.5	7.6
29–0000	Healthcare practitioners and technical occupations.....	7,491.3	9,090.8	5.0	5.5	1,599.6	21.4	3,139.3
29–1000	Health diagnosing and treating practitioners.....	4,630.4	5,645.5	3.1	3.4	1,015.1	21.9	1,866.3
29–1011	Chiropractors.....	49.1	58.7	.0	.0	9.6	19.5	18.2
29–1020	Dentists.....	141.9	164.0	.1	.1	22.1	15.6	61.5
29–1021	Dentists, general.....	120.2	138.6	.1	.1	18.4	15.3	51.8
29–1022	Oral and maxillofacial surgeons.....	6.7	7.7	.0	.0	1.0	15.3	2.9
29–1023	Orthodontists.....	7.7	9.2	.0	.0	1.5	19.8	3.6
29–1024	Prosthodontists.....	.5	.7	.0	.0	.1	27.7	.3
29–1029	Dentists, all other specialists.....	6.9	7.9	.0	.0	1.0	14.7	2.9
29–1031	Dietitians and nutritionists.....	60.3	65.8	.0	.0	5.6	9.2	25.7
29–1041	Optometrists.....	34.8	43.2	.0	.0	8.5	24.4	20.1
29–1051	Pharmacists.....	269.9	315.8	.2	.2	45.9	17.0	105.8
29–1060	Physicians and surgeons.....	661.4	805.5	.4	.5	144.1	21.8	260.5
29–1071	Physician assistants.....	74.8	103.9	.0	.1	29.2	39.0	42.8
29–1081	Podiatrists.....	12.2	13.3	.0	.0	1.1	9.0	3.2
29–1111	Registered nurses.....	2,618.7	3,200.2	1.7	1.9	581.5	22.2	1,039.0
29–1120	Therapists.....	598.7	740.2	.4	.4	141.6	23.7	244.1
29–1121	Audiologists.....	12.8	16.0	.0	.0	3.2	25.0	5.8
29–1122	Occupational therapists.....	104.5	131.3	.1	.1	26.8	25.6	45.8
29–1123	Physical therapists.....	185.5	241.7	.1	.1	56.2	30.3	78.6
29–1124	Radiation therapists.....	15.2	19.4	.0	.0	4.1	27.1	6.9
29–1125	Recreational therapists.....	23.3	26.7	.0	.0	3.4	14.6	11.6
29–1126	Respiratory therapists.....	105.9	128.1	.1	.1	22.1	20.9	41.4
29–1127	Speech-language pathologists.....	119.3	141.4	.1	.1	22.1	18.5	43.8
29–1129	Therapists, all other.....	32.2	35.9	.0	.0	3.7	11.5	10.2
29–1131	Veterinarians.....	59.7	79.4	.0	.0	19.7	33.0	30.2
29–1199	Health diagnosing and treating practitioners, all other.....	49.0	55.4	.0	.0	6.4	13.0	15.3
29–2000	Health technologists and technicians.....	2,718.8	3,280.0	1.8	2.0	561.2	20.6	1,202.2
29–2010	Clinical laboratory technologists and technicians....	328.1	373.6	.2	.2	45.6	13.9	107.9
29–2011	Medical and clinical laboratory technologists.....	172.4	193.0	.1	.1	20.5	11.9	53.3

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
29–2012	Medical and clinical laboratory technicians	155.6	180.7	0.1	0.1	25.0	16.1	54.6
29–2021	Dental hygienists	174.1	237.0	.1	.1	62.9	36.1	98.4
29–2030	Diagnostic related technologists and technicians....	336.2	397.9	.2	.2	61.7	18.3	110.3
29–2031	Cardiovascular technologists and technicians	49.5	61.4	.0	.0	11.9	24.1	19.1
29–2032	Diagnostic medical sonographers	50.3	59.5	.0	.0	9.2	18.3	16.5
29–2033	Nuclear medicine technologists	21.8	25.4	.0	.0	3.6	16.3	6.7
29–2034	Radiologic technologists and technicians	214.7	251.7	.1	.2	37.0	17.2	68.0
29–2041	Emergency medical technicians and paramedics	210.7	229.7	.1	.1	19.0	9.0	62.0
29–2050	Health diagnosing and treating practitioner support technicians.....	596.2	753.3	.4	.5	157.1	26.4	307.6
29–2051	Dietetic technicians.....	25.2	28.7	.0	.0	3.5	13.9	9.9
29–2052	Pharmacy technicians.....	326.3	426.0	.2	.3	99.8	30.6	182.0
29–2053	Psychiatric technicians	57.1	59.5	.0	.0	2.4	4.2	16.8
29–2054	Respiratory therapy technicians.....	16.5	16.4	.0	.0	–2	–1.1	4.2
29–2055	Surgical technologists	91.5	114.7	.1	.1	23.2	25.3	46.3
29–2056	Veterinary technologists and technicians.....	79.6	108.1	.1	.1	28.5	35.8	48.5
29–2061	Licensed practical and licensed vocational nurses...	753.6	909.2	.5	.5	155.6	20.6	391.3
29–2071	Medical records and health information technicians	172.5	207.6	.1	.1	35.1	20.3	70.3
29–2081	Opticians, dispensing.....	59.8	67.8	.0	.0	8.0	13.4	20.2
29–2090	Miscellaneous health technologists and technicians	87.7	103.9	.1	.1	16.2	18.5	34.1
29–2091	Orthotists and prosthetists.....	5.9	6.8	.0	.0	.9	15.5	2.1
29–2099	Healthcare technologists and technicians, all other	81.8	97.1	.1	.1	15.3	18.7	32.0
29–9000	Other healthcare practitioners and technical occupations.....	142.1	165.4	.1	.1	23.3	16.4	70.8
29–9010	Occupational health and safety specialists and technicians.....	66.7	74.5	.0	.0	7.8	11.7	30.1
29–9011	Occupational health and safety specialists.....	55.8	62.0	.0	.0	6.2	11.2	24.9
29–9012	Occupational health and safety technicians	10.9	12.5	.0	.0	1.6	14.4	5.2
29–9090	Miscellaneous health practitioners and technical workers.....	75.4	90.8	.0	.1	15.4	20.5	40.6
29–9091	Athletic trainers.....	16.3	22.4	.0	.0	6.0	36.9	11.5
29–9099	Healthcare practitioners and technical workers, all other	59.0	68.4	.0	.0	9.4	15.9	29.1
31–3900	Service occupations ⁴	29,575.9	33,645.1	19.6	20.2	4,069.2	13.8	11,717.6
31–0000	Healthcare support occupations.....	3,982.4	5,129.5	2.6	3.1	1,147.1	28.8	1,595.3
31–1000	Nursing, psychiatric, and home health aides	2,454.0	3,194.4	1.6	1.9	740.5	30.2	984.8
31–1011	Home health aides	921.7	1,382.6	.6	.8	460.9	50.0	552.7
31–1012	Nursing aides, orderlies, and attendants.....	1,469.8	1,745.8	1.0	1.1	276.0	18.8	422.3
31–1013	Psychiatric aides	62.5	66.1	.0	.0	3.6	5.8	9.8
31–2000	Occupational and physical therapist assistants and aides.....	144.3	192.6	.1	.1	48.3	33.5	69.1
31–2010	Occupational therapist assistants and aides.....	34.4	44.8	.0	.0	10.3	30.0	15.3
31–2011	Occupational therapist assistants	26.6	34.6	.0	.0	7.9	29.8	11.8
31–2012	Occupational therapist aides	7.8	10.2	.0	.0	2.4	30.7	3.5
31–2020	Physical therapist assistants and aides	109.9	147.8	.1	.1	37.9	34.5	53.8
31–2021	Physical therapist assistants	63.8	85.0	.0	.1	21.2	33.3	30.5
31–2022	Physical therapist aides.....	46.1	62.8	.0	.0	16.7	36.3	23.4
31–9000	Other healthcare support occupations.....	1,384.1	1,742.5	.9	1.0	358.4	25.9	541.3
31–9011	Massage therapists.....	122.4	145.6	.1	.1	23.2	18.9	39.5
31–9090	Miscellaneous healthcare support occupations.....	1,261.7	1,596.9	.8	1.0	335.2	26.6	501.8

See footnotes at end of table

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
31–9091	Dental assistants.....	295.3	400.9	0.2	0.2	105.6	35.8	161.0
31–9092	Medical assistants	483.6	647.5	.3	.4	163.9	33.9	217.8
31–9093	Medical equipment preparers.....	46.8	52.8	.0	.0	6.0	12.8	11.2
31–9094	Medical transcriptionists	105.2	116.9	.1	.1	11.7	11.1	23.5
31–9095	Pharmacy aides.....	54.9	51.5	.0	.0	–3.5	–6.3	6.1
31–9096	Veterinary assistants and laboratory animal caretaker	75.2	92.4	.0	.1	17.1	22.8	25.5
31–9099	All other healthcare support workers.....	200.6	235.0	.1	.1	34.3	17.1	56.7
33–0000	Protective service occupations	3,270.0	3,670.1	2.2	2.2	400.1	12.2	1,303.7
33–1000	First-line supervisors/managers, protective service workers	251.6	274.4	.2	.2	22.7	9.0	129.2
33–1010	First-line supervisors/managers, law enforcement workers.....	140.8	152.3	.1	.1	11.5	8.2	69.9
33–1011	First-line supervisors/managers of correctional officers	43.5	47.2	.0	.0	3.7	8.5	19.4
33–1012	First-line supervisors/managers of police and detectives	97.3	105.2	.1	.1	7.8	8.1	50.5
33–1021	First-line supervisors/managers of fire fighting and prevention workers.....	55.2	59.7	.0	.0	4.5	8.2	32.5
33–1099	All other first-line supervisors/managers, protective service workers.....	55.6	62.3	.0	.0	6.7	12.0	26.8
33–2000	Fire fighting and prevention workers	326.9	386.0	.2	.2	59.0	18.1	158.9
33–2011	Fire fighters	310.4	367.9	.2	.2	57.5	18.5	152.8
33–2020	Fire inspectors.....	16.6	18.1	.0	.0	1.5	9.2	6.0
33–2021	Fire inspectors and investigators.....	14.7	16.1	.0	.0	1.4	9.3	5.4
33–2022	Forest fire inspectors and prevention specialists ..	1.8	2.0	.0	.0	.2	8.4	.7
33–3000	Law enforcement workers.....	1,271.1	1,392.5	.8	.8	121.5	9.6	425.7
33–3010	Bailiffs, correctional officers, and jailers.....	474.8	519.4	.3	.3	44.6	9.4	149.8
33–3011	Bailiffs	20.2	21.9	.0	.0	1.7	8.4	6.2
33–3012	Correctional officers and jailers.....	454.5	497.5	.3	.3	42.9	9.4	143.6
33–3021	Detectives and criminal investigators.....	112.2	130.9	.1	.1	18.7	16.6	41.6
33–3031	Fish and game wardens.....	8.3	9.0	.0	.0	.7	8.3	2.7
33–3041	Parking enforcement workers.....	10.0	10.0	.0	.0	.0	–.1	2.4
33–3050	Police officers	665.7	723.3	.4	.4	57.5	8.6	229.2
33–3051	Police and sheriff's patrol officers.....	661.5	718.8	.4	.4	57.3	8.7	227.9
33–3052	Transit and railroad police.....	4.3	4.5	.0	.0	.2	5.3	1.2
33–9000	Other protective service workers	1,420.3	1,617.2	.9	1.0	196.8	13.9	590.0
33–9011	Animal control workers	16.1	17.5	.0	.0	1.5	9.0	5.8
33–9021	Private detectives and investigators.....	45.5	55.5	.0	.0	10.0	22.0	19.3
33–9030	Security guards and gaming surveillance officers....	1,086.0	1,239.5	.7	.7	153.6	14.1	376.9
33–9031	Gaming surveillance officers and gaming investigators	9.3	10.4	.0	.0	1.1	11.7	3.0
33–9032	Security guards	1,076.6	1,229.1	.7	.7	152.5	14.2	373.9
33–9090	Miscellaneous protective service workers	272.8	304.7	.2	.2	31.8	11.7	188.0
33–9091	Crossing guards	69.9	76.5	.0	.0	6.6	9.4	25.6
33–9092	Lifeguards, ski patrol, and other recreational protective service workers	115.2	128.2	.1	.1	12.9	11.2	90.8
33–9099	Protective service workers, all other.....	87.7	100.0	.1	.1	12.3	14.0	71.5
35–0000	Food preparation and serving related occupations.....	11,552.1	12,559.6	7.7	7.6	1,007.6	8.7	5,100.5
35–1000	Supervisors, food preparation and serving workers....	941.6	997.0	.6	.6	55.4	5.9	145.2
35–1011	Chefs and head cooks	108.3	108.5	.1	.1	.2	.2	10.8
35–1012	First-line supervisors/managers of food preparation and serving workers	833.3	888.5	.6	.5	55.1	6.6	134.4

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
35–2000	Cooks and food preparation workers.....	2,958.1	3,149.6	2.0	1.9	191.5	6.5	1,039.5
35–2010	Cooks.....	2,066.2	2,220.0	1.4	1.3	153.8	7.4	682.4
35–2011	Cooks, fast food.....	566.0	608.4	.4	.4	42.4	7.5	187.2
35–2012	Cooks, institution and cafeteria	391.8	429.7	.3	.3	37.9	9.7	138.1
35–2013	Cooks, private household.....	4.9	5.1	.0	.0	.2	4.3	1.5
35–2014	Cooks, restaurant.....	914.2	984.4	.6	.6	70.3	7.7	304.2
35–2015	Cooks, short order.....	171.4	171.5	.1	.1	.1	.0	43.9
35–2019	Cooks, all other.....	18.0	20.9	.0	.0	2.9	16.3	7.5
35–2021	Food preparation workers.....	891.9	929.6	.6	.6	37.8	4.2	357.0
35–3000	Food and beverage serving workers.....	6,307.2	6,962.3	4.2	4.2	655.1	10.4	3,142.0
35–3011	Bartenders.....	508.7	549.5	.3	.3	40.8	8.0	222.0
35–3020	Fast food and counter workers.....	3,227.1	3,670.4	2.1	2.2	443.3	13.7	1,402.1
35–3021	Combined food preparation and serving workers, including fast food.....	2,701.7	3,096.0	1.8	1.9	394.3	14.6	967.2
35–3022	Counter attendants, cafeteria, food concession, and coffee shop.....	525.4	574.4	.3	.3	49.0	9.3	434.9
35–3031	Waiters and waitresses.....	2,381.6	2,533.3	1.6	1.5	151.6	6.4	1,466.2
35–3041	Food servers, nonrestaurant.....	189.8	209.1	.1	.1	19.3	10.2	51.8
35–9000	Other food preparation and serving related workers.....	1,345.2	1,450.8	.9	.9	105.6	7.9	773.7
35–9011	Dining room and cafeteria attendants and bartender helpers.....	420.7	444.0	.3	.3	23.3	5.5	205.7
35–9021	Dishwashers.....	522.9	583.4	.3	.4	60.4	11.6	275.7
35–9031	Hosts and hostesses, restaurant, lounge, and coffee shop.....	350.7	373.4	.2	.2	22.8	6.5	266.8
35–9099	Food preparation and serving related workers, all other.....	50.9	50.0	.0	.0	–.9	–1.7	25.6
37–0000	Building and grounds cleaning and maintenance occupations.....	5,727.2	6,211.0	3.8	3.7	483.9	8.4	1,434.4
37–1000	Supervisors, building and grounds cleaning and maintenance workers.....	469.0	514.3	.3	.3	45.2	9.6	95.0
37–1011	First-line supervisors/managers of housekeeping and janitorial workers.....	251.1	263.9	.2	.2	12.8	5.1	38.9
37–1012	First-line supervisors/managers of landscaping, lawn service, and groundskeeping workers.....	217.9	250.3	.1	.2	32.4	14.9	56.0
37–2000	Building cleaning and pest control workers.....	3,955.5	4,157.2	2.6	2.5	201.8	5.1	945.9
37–2010	Building cleaning workers.....	3,887.9	4,079.4	2.6	2.5	191.5	4.9	911.9
37–2011	Janitors and cleaners, except maids and housekeeping cleaners.....	2,375.3	2,479.4	1.6	1.5	104.1	4.4	553.0
37–2012	Maids and housekeeping cleaners.....	1,498.2	1,583.7	1.0	1.0	85.6	5.7	354.4
37–2019	Building cleaning workers, all other.....	14.5	16.2	.0	.0	1.7	12.1	4.5
37–2021	Pest control workers.....	67.5	77.8	.0	.0	10.3	15.3	34.0
37–3000	Grounds maintenance workers.....	1,302.7	1,539.5	.9	.9	236.8	18.2	393.6
37–3010	Grounds maintenance workers.....	1,302.7	1,539.5	.9	.9	236.8	18.2	393.6
37–3011	Landscaping and groundskeeping workers.....	1,205.8	1,422.9	.8	.9	217.1	18.0	362.2
37–3012	Pesticide handlers, sprayers, and applicators, vegetation.....	30.8	36.3	.0	.0	5.4	17.7	9.1
37–3013	Tree trimmers and pruners.....	45.0	56.8	.0	.0	11.8	26.3	17.2
37–3019	Grounds maintenance workers, all other.....	21.1	23.6	.0	.0	2.5	11.8	5.0
39–0000	Personal care and service occupations.....	5,044.2	6,074.8	3.3	3.7	1,030.6	20.4	2,283.7
39–1000	Supervisors, personal care and service workers.....	278.4	316.7	.2	.2	38.2	13.7	111.2
39–1010	First-line supervisors/managers of gaming workers.....	65.3	70.8	.0	.0	5.5	8.4	20.4
39–1011	Gaming supervisors.....	40.9	45.7	.0	.0	4.8	11.8	14.1
39–1012	Slot key persons.....	24.4	25.1	.0	.0	.7	2.8	6.2

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
39–1021	First-line supervisors/managers of personal service workers	213.2	245.9	0.1	0.1	32.7	15.4	90.8
39–2000	Animal care and service workers	220.4	265.9	.1	.2	45.5	20.6	92.7
39–2011	Animal trainers.....	47.1	56.7	.0	.0	9.6	20.4	19.0
39–2021	Nonfarm animal caretakers.....	173.3	209.1	.1	.1	35.9	20.7	73.6
39–3000	Entertainment attendants and related workers.....	569.0	652.0	.4	.4	83.0	14.6	377.8
39–3010	Gaming services workers	121.3	142.4	.1	.1	21.1	17.4	72.5
39–3011	Gaming dealers.....	91.1	108.4	.1	.1	17.3	19.0	55.9
39–3012	Gaming and sports book writers and runners.....	16.2	18.3	.0	.0	2.1	13.2	9.0
39–3019	Gaming service workers, all other.....	14.1	15.7	.0	.0	1.6	11.7	7.6
39–3021	Motion picture projectionists.....	10.8	10.9	.0	.0	.1	.6	4.7
39–3031	Ushers, lobby attendants, and ticket takers.....	106.1	120.7	.1	.1	14.5	13.7	81.9
39–3090	Miscellaneous entertainment attendants and related workers.....	330.7	378.0	.2	.2	47.3	14.3	218.7
39–3091	Amusement and recreation attendants.....	263.0	298.0	.2	.2	35.0	13.3	171.2
39–3092	Costume attendants.....	5.1	5.8	.0	.0	.7	13.8	3.3
39–3093	Locker room, coatroom, and dressing room attendants	18.5	20.9	.0	.0	2.4	13.2	12.0
39–3099	Entertainment attendants and related workers, all other.....	44.1	53.3	.0	.0	9.2	20.9	32.1
39–4000	Funeral service workers.....	43.0	52.5	.0	.0	9.5	22.1	30.0
39–4011	Embalmers.....	8.5	8.9	.0	.0	.4	5.2	4.5
39–4021	Funeral attendants	34.5	43.6	.0	.0	9.1	26.2	25.5
39–5000	Personal appearance workers.....	824.7	990.7	.5	.6	166.0	20.1	286.7
39–5010	Barbers and cosmetologists.....	684.2	817.4	.5	.5	133.2	19.5	233.5
39–5011	Barbers	53.5	59.7	.0	.0	6.2	11.6	14.0
39–5012	Hairdressers, hairstylists, and cosmetologists.....	630.7	757.7	.4	.5	127.0	20.1	219.5
39–5090	Miscellaneous personal appearance workers	140.5	173.3	.1	.1	32.8	23.3	53.3
39–5091	Makeup artists, theatrical and performance	2.8	3.3	.0	.0	.5	16.9	.9
39–5092	Manicurists and pedicurists.....	76.0	90.2	.1	.1	14.3	18.8	25.3
39–5093	Shampooers	22.9	26.3	.0	.0	3.4	14.6	6.7
39–5094	Skin care specialists	38.8	53.5	.0	.0	14.7	37.9	20.3
39–6000	Transportation, tourism, and lodging attendants	235.7	260.5	.2	.2	24.7	10.5	88.6
39–6010	Baggage porters, bellhops, and concierges.....	71.3	80.6	.0	.0	9.3	13.0	27.7
39–6011	Baggage porters and bellhops.....	50.5	56.9	.0	.0	6.4	12.7	19.5
39–6012	Concierges	20.8	23.7	.0	.0	2.8	13.7	8.2
39–6020	Tour and travel guides	44.0	48.6	.0	.0	4.6	10.4	23.0
39–6021	Tour guides and escorts.....	38.4	42.9	.0	.0	4.5	11.7	20.6
39–6022	Travel guides.....	5.6	5.7	.0	.0	.1	1.7	2.4
39–6030	Transportation attendants.....	120.4	131.3	.1	.1	10.9	9.1	37.9
39–6031	Flight attendants	98.7	106.7	.1	.1	8.0	8.1	30.1
39–6032	Transportation attendants, except flight attendants and baggage porters.....	21.7	24.6	.0	.0	2.9	13.3	7.7
39–9000	Other personal care and service workers	2,873.1	3,536.7	1.9	2.1	663.6	23.1	1,296.8
39–9011	Child care workers.....	1,301.9	1,443.9	.9	.9	142.1	10.9	523.1
39–9021	Personal and home care aides	817.2	1,193.0	.5	.7	375.8	46.0	477.8
39–9030	Recreation and fitness workers.....	588.7	713.7	.4	.4	125.0	21.2	231.0
39–9031	Fitness trainers and aerobics instructors	261.1	337.9	.2	.2	76.8	29.4	123.8
39–9032	Recreation workers.....	327.5	375.7	.2	.2	48.2	14.7	107.2
39–9041	Residential advisors.....	56.9	62.0	.0	.0	5.2	9.1	25.3
39–9099	Personal care and service workers, all other	108.5	124.0	.1	.1	15.5	14.3	39.6
41–0000	Sales and related occupations.....	15,902.7	16,883.1	10.5	10.2	980.4	6.2	5,712.8

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
41–1000	Supervisors, sales workers.....	2,192.3	2,305.1	1.5	1.4	112.8	5.1	579.6
41–1011	First-line supervisors/managers of retail sales workers.....	1,685.5	1,773.9	1.1	1.1	88.4	5.2	450.1
41–1012	First-line supervisors/managers of non-retail sales workers.....	506.8	531.2	.3	.3	24.4	4.8	129.5
41–2000	Retail sales workers.....	8,737.1	9,251.0	5.8	5.6	513.8	5.9	3,572.9
41–2010	Cashiers.....	3,572.3	3,695.5	2.4	2.2	123.2	3.4	1,729.9
41–2011	Cashiers, except gaming.....	3,550.0	3,675.5	2.4	2.2	125.5	3.5	1,719.9
41–2012	Gaming change persons and booth cashiers.....	22.3	20.0	.0	.0	-2.3	-10.4	10.0
41–2020	Counter and rental clerks and parts salespersons....	675.7	691.6	.4	.4	16.0	2.4	216.1
41–2021	Counter and rental clerks.....	448.2	461.9	.3	.3	13.7	3.1	133.5
41–2022	Parts salespersons.....	227.5	229.7	.2	.1	2.2	1.0	82.6
41–2031	Retail salespersons.....	4,489.2	4,863.9	3.0	2.9	374.7	8.3	1,626.9
41–3000	Sales representatives, services.....	1,613.8	1,787.7	1.1	1.1	173.9	10.8	560.5
41–3011	Advertising sales agents.....	166.8	178.9	.1	.1	12.1	7.2	45.1
41–3021	Insurance sales agents.....	434.8	486.4	.3	.3	51.6	11.9	152.6
41–3031	Securities, commodities, and financial services sales agents.....	317.2	346.7	.2	.2	29.6	9.3	126.8
41–3041	Travel agents.....	105.3	104.1	.1	.1	-1.2	-1.1	7.9
41–3099	Sales representatives, services, all other.....	589.7	671.6	.4	.4	81.9	13.9	228.1
41–4000	Sales representatives, wholesale and manufacturing	1,973.2	2,116.4	1.3	1.3	143.2	7.3	600.2
41–4011	Sales representatives, wholesale and manufacturing, technical and scientific products..	432.9	475.0	.3	.3	42.0	9.7	142.3
41–4012	Sales representatives, wholesale and manufacturing, except technical and scientific products.....	1,540.3	1,641.4	1.0	1.0	101.1	6.6	457.9
41–9000	Other sales and related workers.....	1,386.3	1,422.9	.9	.9	36.6	2.6	399.6
41–9010	Models, demonstrators, and product promoters.....	105.0	112.7	.1	.1	7.7	7.3	37.9
41–9011	Demonstrators and product promoters.....	102.8	110.1	.1	.1	7.3	7.1	36.9
41–9012	Models.....	2.2	2.6	.0	.0	.4	16.0	1.0
41–9020	Real estate brokers and sales agents.....	517.8	592.1	.3	.4	74.3	14.4	159.1
41–9021	Real estate brokers.....	123.4	134.0	.1	.1	10.6	8.6	30.8
41–9022	Real estate sales agents.....	394.4	458.2	.3	.3	63.7	16.2	128.3
41–9031	Sales engineers.....	78.0	84.9	.1	.1	6.9	8.8	35.0
41–9041	Telemarketers.....	341.6	303.8	.2	.2	-37.8	-11.1	85.9
41–9090	Miscellaneous sales and related workers.....	343.8	329.4	.2	.2	-14.5	-4.2	81.6
41–9091	Door-to-door sales workers, news and street vendors, and related workers.....	181.6	154.7	.1	.1	-26.9	-14.8	33.1
41–9099	Sales and related workers, all other.....	162.2	174.6	.1	.1	12.4	7.6	48.6
43–0000	Office and administrative support occupations.....	24,100.6	25,942.7	16.0	15.6	1,842.1	7.6	7,254.7
43–1000	Supervisors, office and administrative support workers.....	1,457.2	1,617.5	1.0	1.0	160.3	11.0	489.0
43–1011	First-line supervisors/managers of office and administrative support workers.....	1,457.2	1,617.5	1.0	1.0	160.3	11.0	489.0
43–2000	Communications equipment operators.....	181.6	163.4	.1	.1	-18.2	-10.0	36.7
43–2011	Switchboard operators, including answering service.....	155.2	138.3	.1	.1	-16.9	-10.9	32.1
43–2021	Telephone operators.....	22.7	21.9	.0	.0	-.8	-3.6	3.9
43–2099	All other communications equipment operators.....	3.6	3.2	.0	.0	-.4	-12.2	.8
43–3000	Financial clerks.....	3,911.2	4,313.4	2.6	2.6	402.2	10.3	1,151.6
43–3011	Bill and account collectors.....	411.0	490.5	.3	.3	79.5	19.3	156.9
43–3021	Billing and posting clerks and machine operators....	528.8	609.6	.4	.4	80.8	15.3	167.6

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
43-3031	Bookkeeping, accounting, and auditing clerks.....	2,063.8	2,276.2	1.4	1.4	212.4	10.3	460.4
43-3041	Gaming cage workers	16.9	15.1	.0	.0	-1.8	-10.4	3.2
43-3051	Payroll and timekeeping clerks.....	208.7	197.7	.1	.1	-10.9	-5.2	49.5
43-3061	Procurement clerks	81.5	86.2	.1	.1	4.8	5.8	29.7
43-3071	Tellers	600.5	638.0	.4	.4	37.5	6.2	284.4
43-4000	Information and record clerks	5,684.7	6,230.2	3.8	3.7	545.5	9.6	2,351.7
43-4011	Brokerage clerks.....	67.6	65.8	.0	.0	-1.8	-2.6	19.2
43-4021	Correspondence clerks	14.2	12.2	.0	.0	-1.9	-13.8	4.0
43-4031	Court, municipal, and license clerks.....	122.1	132.1	.1	.1	10.0	8.2	44.6
43-4041	Credit authorizers, checkers, and clerks	63.8	65.6	.0	.0	1.8	2.8	19.9
43-4051	Customer service representatives.....	2,252.4	2,651.9	1.5	1.6	399.5	17.7	1,108.4
43-4061	Eligibility interviewers, government programs	119.5	130.5	.1	.1	11.0	9.2	38.8
43-4071	File clerks.....	212.2	162.6	.1	.1	-49.6	-23.4	51.6
43-4081	Hotel, motel, and resort desk clerks.....	230.2	261.7	.2	.2	31.5	13.7	109.5
43-4111	Interviewers, except eligibility and loan.....	233.4	269.9	.2	.2	36.4	15.6	92.1
43-4121	Library assistants, clerical.....	122.0	135.5	.1	.1	13.5	11.1	64.2
43-4131	Loan interviewers and clerks	210.4	219.4	.1	.1	9.1	4.3	60.9
43-4141	New accounts clerks	87.3	87.4	.1	.1	.1	.1	24.9
43-4151	Order clerks	245.7	181.5	.2	.1	-64.2	-26.1	69.6
43-4161	Human resources assistants, except payroll and timekeeping	169.7	160.0	.1	.1	-9.7	-5.7	48.1
43-4171	Receptionists and information clerks.....	1,139.2	1,312.1	.8	.8	172.9	15.2	480.2
43-4181	Reservation and transportation ticket agents and travel clerks.....	168.3	181.9	.1	.1	13.6	8.1	51.5
43-4199	Information and record clerks, all other	226.9	200.1	.2	.1	-26.7	-11.8	64.3
43-5000	Material recording, scheduling, dispatching, and distributing occupations.....	4,113.1	4,144.8	2.7	2.5	31.7	.8	1,147.3
43-5011	Cargo and freight agents.....	85.9	106.5	.1	.1	20.6	23.9	40.3
43-5021	Couriers and messengers.....	122.4	122.0	.1	.1	-4	-3	28.1
43-5030	Dispatchers	295.6	308.4	.2	.2	12.8	4.3	78.7
43-5031	Police, fire, and ambulance dispatchers.....	99.9	117.7	.1	.1	17.8	17.8	38.4
43-5032	Dispatchers, except police, fire, and ambulance ...	195.7	190.7	.1	.1	-5.0	-2.6	40.3
43-5041	Meter readers, utilities.....	45.3	36.3	.0	.0	-9.1	-20.0	12.5
43-5050	Postal service workers.....	599.0	526.9	.4	.3	-72.1	-12.0	139.9
43-5051	Postal service clerks.....	750.8	62.1	.1	.0	-13.7	-18.0	16.1
43-5052	Postal service mail carriers.....	343.3	339.4	.2	.2	-3.9	-1.1	107.2
43-5053	Postal service mail sorters, processors, and processing machine operators	179.9	125.3	.1	.1	-54.5	-30.3	16.6
43-5061	Production, planning, and expediting clerks.....	283.5	287.8	.2	.2	4.3	1.5	74.1
43-5071	Shipping, receiving, and traffic clerks.....	750.5	701.2	.5	.4	-49.3	-6.6	186.2
43-5081	Stock clerks and order fillers	1,858.8	1,993.3	1.2	1.2	134.4	7.2	562.6
43-5111	Weighers, measurers, checkers, and samplers, recordkeeping	71.9	62.4	.0	.0	-9.4	-13.1	25.1
43-6000	Secretaries and administrative assistants.....	4,348.1	4,819.7	2.9	2.9	471.6	10.8	1,057.4
43-6011	Executive secretaries and administrative assistants	1,594.4	1,798.8	1.1	1.1	204.4	12.8	419.2
43-6012	Legal secretaries.....	262.6	311.0	.2	.2	48.4	18.4	83.8
43-6013	Medical secretaries.....	471.1	596.6	.3	.4	125.5	26.6	189.0
43-6014	Secretaries, except legal, medical, and executive	2,020.0	2,113.3	1.3	1.3	93.3	4.6	365.5
43-9000	Other office and administrative support workers	4,404.8	4,653.7	2.9	2.8	249.0	5.7	1,021.0
43-9011	Computer operators	110.0	89.5	.1	.1	-20.5	-18.6	12.4
43-9020	Data entry and information processing workers.....	426.2	400.7	.3	.2	-25.5	-6.0	70.2
43-9021	Data entry keyers	284.3	266.9	.2	.2	-17.4	-6.1	59.2

See footnotes at end of table

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
43-9022	Word processors and typists	141.9	133.9	0.1	0.1	-8.1	-5.7	11.0
43-9031	Desktop publishers	26.4	20.4	.0	.0	-5.9	-22.5	4.4
43-9041	Insurance claims and policy processing clerks	253.8	254.4	.2	.2	.7	.3	33.8
43-9051	Mail clerks and mail machine operators, except postal service	141.4	124.8	.1	.1	-16.6	-11.8	25.6
43-9061	Office clerks, general	3,024.4	3,383.1	2.0	2.0	358.7	11.9	770.9
43-9071	Office machine operators, except computer	79.9	73.8	.1	.0	-6.0	-7.6	26.5
43-9081	Proofreaders and copy markers.....	18.2	17.1	.0	.0	-1.1	-6.1	3.0
43-9111	Statistical assistants	17.9	18.8	.0	.0	.9	5.1	3.9
43-9199	Office and administrative support workers, all other	306.7	271.0	.2	.2	-35.7	-11.6	70.4
45-0000	Farming, fishing, and forestry occupations	1,035.4	1,026.3	.7	.6	-9.1	-9	291.0
45-1000	Supervisors, farming, fishing, and forestry workers.....	48.6	52.4	.0	.0	3.8	7.8	16.3
45-2000	Agricultural workers.....	871.8	856.6	.6	.5	-15.2	-1.7	238.8
45-2011	Agricultural inspectors.....	16.6	18.7	.0	.0	2.1	12.8	5.5
45-2021	Animal breeders.....	14.7	15.5	.0	.0	.8	5.8	4.8
45-2041	Graders and sorters, agricultural products.....	33.4	33.5	.0	.0	.1	.2	6.9
45-2090	Miscellaneous agricultural workers.....	807.0	788.8	.5	.5	-18.2	-2.3	221.6
45-3000	Fishing and hunting workers	36.0	33.3	.0	.0	-2.7	-7.6	9.3
45-3011	Fishers and related fishing workers.....	35.6	32.9	.0	.0	-2.7	-7.7	9.2
45-4000	Forest, conservation, and logging workers.....	79.0	84.0	.1	.1	5.0	6.3	26.5
45-4011	Forest and conservation workers.....	12.9	14.0	.0	.0	1.1	8.5	4.5
45-4020	Logging workers	66.1	70.0	.0	.0	3.9	5.9	22.1
45-4021	Fallers.....	11.0	10.7	.0	.0	-.3	-2.9	3.0
45-4022	Logging equipment operators.....	41.7	44.9	.0	.0	3.2	7.7	14.4
45-4023	Log graders and scalers	5.5	5.4	.0	.0	-.1	-1.8	1.5
45-4029	Logging workers, all other	8.0	9.1	.0	.0	1.1	13.5	3.2
47-0000	Construction and extraction occupations	7,810.3	8,828.8	5.2	5.3	1,018.6	13.0	2,395.6
47-1000	Supervisors, construction and extraction workers.....	698.1	805.3	.5	.5	107.3	15.4	242.2
47-1011	First-line supervisors/managers of construction trades and extraction workers.....	698.1	805.3	.5	.5	107.3	15.4	242.2
47-2000	Construction trades and related workers	6,017.8	6,826.1	4.0	4.1	808.4	13.4	1,776.6
47-2011	Boilermakers.....	20.2	24.0	.0	.0	3.8	18.8	8.1
47-2020	Brickmasons, blockmasons, and stonemasons.....	160.2	178.6	.1	.1	18.5	11.5	59.0
47-2021	Brickmasons and blockmasons.....	135.8	151.5	.1	.1	15.6	11.5	50.0
47-2022	Stonemasons	24.3	27.1	.0	.0	2.8	11.6	9.0
47-2031	Carpenters	1,284.9	1,450.3	.9	.9	165.4	12.9	325.4
47-2040	Carpet, floor, and tile installers and finishers.....	160.5	171.9	.1	.1	11.4	7.1	54.1
47-2041	Carpet installers	51.1	50.5	.0	.0	-.6	-1.1	13.3
47-2042	Floor layers, except carpet, wood, and hard tiles ..	21.2	21.0	.0	.0	-.2	-1.0	5.5
47-2043	Floor sanders and finishers.....	12.2	13.6	.0	.0	1.4	11.3	4.6
47-2044	Tile and marble setters.....	76.0	86.8	.1	.1	10.8	14.3	30.7
47-2050	Cement masons, concrete finishers, and terrazzo workers.....	206.6	233.2	.1	.1	26.6	12.9	78.6
47-2051	Cement masons and concrete finishers.....	201.0	226.8	.1	.1	25.9	12.9	76.4
47-2053	Terrazzo workers and finishers	5.6	6.3	.0	.0	.7	12.7	2.1
47-2061	Construction laborers.....	1,248.7	1,504.6	.8	.9	255.9	20.5	339.4
47-2070	Construction equipment operators.....	469.3	525.5	.3	.3	56.2	12.0	136.3
47-2071	Paving, surfacing, and tamping equipment operators.....	60.2	67.2	.0	.0	6.9	11.5	16.8
47-2072	Pile-driver operators	4.6	5.2	.0	.0	.6	13.1	1.4

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and re-placement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
47-2073	Operating engineers and other construction equipment operators	404.5	453.2	0.3	0.3	48.7	12.0	118.2
47-2080	Drywall installers, ceiling tile installers, and tapers..	188.7	214.0	.1	.1	25.3	13.4	46.0
47-2081	Drywall and ceiling tile installers.....	151.3	171.7	.1	.1	20.5	13.5	37.0
47-2082	Tapers	37.4	42.3	.0	.0	4.9	13.0	9.0
47-2111	Electricians	694.9	777.9	.5	.5	83.0	11.9	250.9
47-2121	Glaziers	54.1	58.3	.0	.0	4.2	7.7	23.9
47-2130	Insulation workers	57.3	67.3	.0	.0	9.9	17.4	28.8
47-2131	Insulation workers, floor, ceiling, and wall	27.6	31.7	.0	.0	4.2	15.2	13.2
47-2132	Insulation workers, mechanical	29.8	35.5	.0	.0	5.8	19.4	15.5
47-2140	Painters and paperhangers	450.1	479.9	.3	.3	29.8	6.6	106.6
47-2141	Painters, construction and maintenance.....	442.8	473.6	.3	.3	30.9	7.0	106.5
47-2142	Paperhangers.....	7.4	6.3	.0	.0	-1.1	-14.5	.1
47-2150	Pipelayers, plumbers, pipefitters, and steamfitters ..	555.9	642.1	.4	.4	86.3	15.5	198.3
47-2151	Pipelayers.....	61.2	71.7	.0	.0	10.5	17.2	22.8
47-2152	Plumbers, pipefitters, and steamfitters	494.7	570.5	.3	.3	75.8	15.3	175.5
47-2161	Plasterers and stucco masons	49.0	52.2	.0	.0	3.2	6.6	11.3
47-2171	Reinforcing iron and rebar workers.....	27.7	31.1	.0	.0	3.5	12.6	8.0
47-2181	Roofers.....	148.9	154.6	.1	.1	5.7	3.8	30.1
47-2211	Sheet metal workers.....	170.7	181.8	.1	.1	11.1	6.5	51.7
47-2221	Structural iron and steel workers	70.2	78.9	.0	.0	8.7	12.4	20.2
47-3000	Helpers, construction trades	381.5	456.0	.3	.3	74.5	19.5	156.3
47-3010	Helpers, construction trades.....	381.5	456.0	.3	.3	74.5	19.5	156.3
47-3011	Helpers—Brickmasons, blockmasons, stonemasons, and tile and marble setter.....	50.8	59.1	.0	.0	8.3	16.4	18.9
47-3012	Helpers—Carpenters	79.8	98.5	.1	.1	18.6	23.3	35.3
47-3013	Helpers—Electricians.....	105.6	131.6	.1	.1	26.0	24.7	48.0
47-3014	Helpers—Painters, paperhangers, plasterers, and stucco masons	19.4	18.7	.0	.0	-7	-3.4	4.0
47-3015	Helpers—Pipelayers, plumbers, pipefitters, and steamfitters	80.3	100.9	.1	.1	20.6	25.7	37.3
47-3016	Helpers—Roofers	18.7	16.9	.0	.0	-1.8	-9.4	3.9
47-3019	All other helpers, construction trades	27.0	30.3	.0	.0	3.3	12.3	8.9
47-4000	Other construction and related workers.....	455.5	514.1	.3	.3	58.6	12.9	173.8
47-4011	Construction and building inspectors	106.4	124.2	.1	.1	17.9	16.8	39.7
47-4021	Elevator installers and repairers	24.9	27.1	.0	.0	2.3	9.2	9.2
47-4031	Fence erectors.....	33.6	38.2	.0	.0	4.6	13.6	8.3
47-4041	Hazardous materials removal workers.....	42.5	48.8	.0	.0	6.3	14.8	17.8
47-4051	Highway maintenance workers.....	145.9	158.3	.1	.1	12.4	8.5	52.0
47-4061	Rail-track laying and maintenance equipment operators	15.5	17.8	.0	.0	2.3	14.8	6.5
47-4071	Septic tank servicers and sewer pipe cleaners.....	25.9	32.1	.0	.0	6.2	23.8	13.2
47-4090	Miscellaneous construction and related workers	60.9	67.6	.0	.0	6.7	11.0	27.1
47-4091	Segmental pavers.....	1.2	1.3	.0	.0	.1	7.1	.5
47-4099	Construction and related workers, all other	59.7	66.3	.0	.0	6.6	11.1	26.6
47-5000	Extraction workers	257.4	227.2	.2	.1	-30.2	-11.7	46.7
47-5010	Derrick, rotary drill, and service unit operators, oil, gas, and mining.....	92.8	75.1	.1	.0	-17.7	-19.0	16.0
47-5011	Derrick operators, oil and gas.....	25.0	19.3	.0	.0	-5.8	-23.0	4.3
47-5012	Rotary drill operators, oil and gas	28.6	22.5	.0	.0	-6.2	-21.5	4.9
47-5013	Service unit operators, oil, gas, and mining	39.1	33.4	.0	.0	-5.7	-14.7	6.7
47-5021	Earth drillers, except oil and gas.....	23.3	25.0	.0	.0	1.7	7.1	5.7

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
47-5031	Explosives workers, ordnance handling experts, and blasters	6.3	6.5	0.0	0.0	0.2	4.0	1.3
47-5040	Mining machine operators	25.3	25.1	.0	.0	-.2	-.8	4.8
47-5041	Continuous mining machine operators	11.2	10.6	.0	.0	-.6	-5.5	1.9
47-5042	Mine cutting and channeling machine operators	9.4	9.8	.0	.0	.4	4.4	2.0
47-5049	All other mining machine operators	4.7	4.7	.0	.0	.0	-.4	.8
47-5051	Rock splitters, quarry	4.4	4.3	.0	.0	-.1	-1.7	.8
47-5061	Roof bolters, mining	5.1	4.8	.0	.0	-.3	-5.7	.9
47-5071	Roustabouts, oil and gas	65.7	57.4	.0	.0	-8.2	-12.5	11.3
47-5081	Helpers—Extraction workers	26.2	21.2	.0	.0	-5.0	-19.2	4.5
47-5099	Extraction workers, all other	8.4	7.8	.0	.0	-.6	-7.3	1.4
49-0000	Installation, maintenance, and repair occupations	5,798.0	6,238.2	3.8	3.8	440.2	7.6	1,586.4
49-1000	Supervisors of installation, maintenance, and repair workers	448.5	467.6	.3	.3	19.1	4.3	136.5
49-1011	First-line supervisors/managers of mechanics, installers, and repairers	448.5	467.6	.3	.3	19.1	4.3	136.5
49-2000	Electrical and electronic equipment mechanics, installers, and repairers	658.8	682.9	.4	.4	24.1	3.7	149.6
49-2011	Computer, automated teller, and office machine repairers	152.9	146.2	.1	.1	-6.7	-4.4	26.3
49-2020	Radio and telecommunications equipment installers and repairers	208.8	208.1	.1	.1	-.7	-.3	36.6
49-2021	Radio mechanics	5.7	5.5	.0	.0	-.2	-4.0	1.0
49-2022	Telecommunications equipment installers and repairers, except line installers.....	203.1	202.6	.1	.1	-.5	-.2	35.6
49-2090	Miscellaneous electrical and electronic equipment mechanics, installers, and repairers	297.1	328.6	.2	.2	31.5	10.6	86.7
49-2091	Avionics technicians.....	18.8	20.8	.0	.0	2.0	10.6	5.2
49-2092	Electric motor, power tool, and related repairers..	23.7	24.9	.0	.0	1.2	5.1	9.4
49-2093	Electrical and electronics installers and repairers, transportation equipment	16.1	16.7	.0	.0	.7	4.1	3.4
49-2094	Electrical and electronics repairers, commercial and industrial equipment.....	78.0	81.0	.1	.0	2.9	3.8	16.4
49-2095	Electrical and electronics repairers, powerhouse, substation, and relay	23.4	26.1	.0	.0	2.7	11.5	6.7
49-2096	Electronic equipment installers and repairers, motor vehicles	19.7	19.7	.0	.0	.0	.1	3.4
49-2097	Electronic home entertainment equipment installers and repairers.....	51.2	56.8	.0	.0	5.5	10.8	14.3
49-2098	Security and fire alarm systems installers.....	66.2	82.6	.0	.0	16.4	24.8	27.8
49-3000	Vehicle and mobile equipment mechanics, installers, and repairers.....	1,722.2	1,805.9	1.1	1.1	83.8	4.9	437.8
49-3011	Aircraft mechanics and service technicians	121.5	129.3	.1	.1	7.8	6.4	31.4
49-3020	Automotive technicians and repairers	949.6	986.6	.6	.6	37.1	3.9	229.8
49-3021	Automotive body and related repairers.....	166.4	167.2	.1	.1	.8	.5	43.8
49-3022	Automotive glass installers and repairers	19.5	19.9	.0	.0	.4	1.8	4.4
49-3023	Automotive service technicians and mechanics ...	763.7	799.6	.5	.5	35.9	4.7	181.7
49-3031	Bus and truck mechanics and diesel engine specialists	263.1	278.0	.2	.2	14.9	5.7	75.3
49-3040	Heavy vehicle and mobile equipment service technicians and mechanics	190.7	206.1	.1	.1	15.5	8.1	51.7
49-3041	Farm equipment mechanics	31.2	33.4	.0	.0	2.1	6.9	8.1

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
49–3042	Mobile heavy equipment mechanics, except engines	136.3	148.1	0.1	0.1	11.8	8.7	37.7
49–3043	Rail car repairers	23.1	24.6	.0	.0	1.5	6.5	5.9
49–3050	Small engine mechanics	70.4	75.1	.0	.0	4.8	6.8	19.4
49–3051	Motorboat mechanics	22.1	23.4	.0	.0	1.2	5.6	5.8
49–3052	Motorcycle mechanics	18.8	20.5	.0	.0	1.6	8.8	5.6
49–3053	Outdoor power equipment and other small engine mechanics	29.4	31.3	.0	.0	1.9	6.4	8.0
49–3090	Miscellaneous vehicle and mobile equipment mechanics, installers, and repairers	126.9	130.6	.1	.1	3.7	2.9	30.1
49–3091	Bicycle repairers	10.1	12.0	.0	.0	1.9	19.3	4.0
49–3092	Recreational vehicle service technicians	13.7	14.6	.0	.0	.9	6.6	3.7
49–3093	Tire repairers and changers	103.2	104.0	.1	.1	.9	.9	22.3
49–9000	Other installation, maintenance, and repair occupations	2,968.5	3,281.8	2.0	2.0	313.3	10.6	862.5
49–9010	Control and valve installers and repairers	61.6	62.9	.0	.0	1.3	2.1	11.4
49–9011	Mechanical door repairers	17.1	19.0	.0	.0	1.9	10.9	4.5
49–9012	Control and valve installers and repairers, except mechanical door	44.5	43.9	.0	.0	–.6	–1.3	6.8
49–9021	Heating, air conditioning, and refrigeration mechanics and installers	308.2	394.8	.2	.2	86.6	28.1	136.2
49–9031	Home appliance repairers	49.6	50.6	.0	.0	1.1	2.2	8.7
49–9040	Industrial machinery installation, repair, and maintenance workers	1,772.1	1,944.8	1.2	1.2	172.8	9.7	445.0
49–9041	Industrial machinery mechanics	287.7	308.6	.2	.2	20.9	7.3	62.4
49–9042	Maintenance and repair workers, general	1,361.3	1,509.2	.9	.9	147.9	10.9	357.5
49–9043	Maintenance workers, machinery	75.4	78.8	.0	.0	3.4	4.6	15.1
49–9044	Millwrights	45.2	45.9	.0	.0	.6	1.4	9.8
49–9045	Refractory materials repairers, except brickmasons	2.5	2.3	.0	.0	–.2	–6.4	.4
49–9050	Line installers and repairers	284.9	291.6	.2	.2	6.6	2.3	73.4
49–9051	Electrical power-line installers and repairers	113.9	119.0	.1	.1	5.1	4.5	45.5
49–9052	Telecommunications line installers and repairers	171.0	172.6	.1	.1	1.6	.9	27.9
49–9060	Precision instrument and equipment repairers	71.2	81.7	.0	.0	10.5	14.7	32.2
49–9061	Camera and photographic equipment repairers	4.6	3.9	.0	.0	–.7	–15.4	1.3
49–9062	Medical equipment repairers	41.4	52.6	.0	.0	11.3	27.2	23.2
49–9063	Musical instrument repairers and tuners	6.1	6.1	.0	.0	.0	.1	1.8
49–9064	Watch repairers	3.2	2.8	.0	.0	–.4	–13.8	.9
49–9069	All other precision instrument and equipment repairers	15.9	16.3	.0	.0	.4	2.5	5.0
49–9090	Miscellaneous installation, maintenance, and repair workers	420.9	455.3	.3	.3	34.4	8.2	155.6
49–9091	Coin, vending, and amusement machine servicers and repairers	43.8	46.9	.0	.0	3.1	7.0	17.7
49–9092	Commercial divers	2.4	2.5	.0	.0	.1	5.8	.5
49–9093	Fabric menders, except garment	1.1	.8	.0	.0	–.3	–29.8	.2
49–9094	Locksmiths and safe repairers	22.1	24.8	.0	.0	2.7	12.0	6.1
49–9095	Manufactured building and mobile home installers	10.3	10.9	.0	.0	.5	5.2	1.2
49–9096	Riggers	13.5	13.5	.0	.0	.0	.3	2.1
49–9097	Signal and track switch repairers	6.8	6.9	.0	.0	.1	1.2	1.1
49–9098	Helpers—Installation, maintenance, and repair workers	150.9	163.5	.1	.1	12.6	8.3	85.0

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
49–9099	Installation, maintenance, and repair workers, all other.....	169.9	185.5	0.1	0.1	15.6	9.2	41.8
51–0000	Production occupations.....	10,083.0	9,733.9	6.7	5.9	-349.2	-3.5	2,155.7
51–1000	Supervisors, production workers.....	681.2	645.5	.5	.4	-35.7	-5.2	91.9
51–1011	First-line supervisors/managers of production and operating workers.....	681.2	645.5	.5	.4	-35.7	-5.2	91.9
51–2000	Assemblers and fabricators.....	1,950.9	1,913.1	1.3	1.2	-37.8	-1.9	425.8
51–2011	Aircraft structure, surfaces, rigging, and systems assemblers.....	44.1	48.2	.0	.0	4.1	9.4	13.4
51–2020	Electrical, electronics, and electromechanical assemblers.....	297.5	254.2	.2	.2	-43.2	-14.5	45.9
51–2021	Coil winders, tapers, and finishers.....	22.1	16.5	.0	.0	-5.6	-25.2	3.4
51–2022	Electrical and electronic equipment assemblers...	213.3	182.0	.1	.1	-31.3	-14.7	32.9
51–2023	Electromechanical equipment assemblers.....	62.1	55.7	.0	.0	-6.4	-10.3	9.6
51–2031	Engine and other machine assemblers.....	39.9	36.7	.0	.0	-3.2	-8.0	8.4
51–2041	Structural metal fabricators and fitters.....	114.1	113.7	.1	.1	-.4	-.4	24.0
51–2090	Miscellaneous assemblers and fabricators.....	1,455.4	1,460.2	1.0	.9	4.9	.3	334.2
51–2091	Fiberglass laminators and fabricators.....	30.3	28.9	.0	.0	-1.4	-4.6	6.8
51–2092	Team assemblers.....	1,112.3	1,112.7	.7	.7	.4	.0	250.9
51–2093	Timing device assemblers, adjusters, and calibrators.....	2.7	2.6	.0	.0	-.1	-4.4	.6
51–2099	All other assemblers and fabricators.....	309.9	316.0	.2	.2	6.0	1.9	75.8
51–3000	Food processing occupations.....	706.7	734.0	.5	.4	27.4	3.9	234.2
51–3011	Bakers.....	151.6	151.9	.1	.1	.3	.2	39.2
51–3020	Butchers and other meat, poultry, and fish processing workers.....	397.1	413.9	.3	.2	16.8	4.2	144.0
51–3021	Butchers and meat cutters.....	129.1	131.0	.1	.1	1.9	1.5	43.3
51–3022	Meat, poultry, and fish cutters and trimmers.....	169.6	180.4	.1	.1	10.8	6.4	65.1
51–3023	Slaughterers and meat packers.....	98.4	102.5	.1	.1	4.1	4.2	35.6
51–3090	Miscellaneous food processing workers.....	157.9	168.2	.1	.1	10.3	6.5	51.0
51–3091	Food and tobacco roasting, baking, and drying machine operators and tenders.....	18.1	18.2	.0	.0	.1	.3	5.3
51–3092	Food batchmakers.....	100.5	109.2	.1	.1	8.8	8.7	32.9
51–3093	Food cooking machine operators and tenders.....	39.3	40.8	.0	.0	1.5	3.8	12.8
51–4000	Metal workers and plastic workers.....	2,158.5	1,999.3	1.4	1.2	-159.2	-7.4	443.0
51–4010	Computer control programmers and operators.....	157.8	164.5	.1	.1	6.7	4.2	40.2
51–4011	Computer-controlled machine tool operators, metal and plastic.....	141.0	150.3	.1	.1	9.3	6.6	36.9
51–4012	Numerical tool and process control programmers	16.8	14.2	.0	.0	-2.6	-15.4	3.3
51–4020	Forming machine setters, operators, and tenders, metal and plastic.....	153.2	137.7	.1	.1	-15.5	-10.1	30.0
51–4021	Extruding and drawing machine setters, operators, and tenders, metal and plastic.....	90.7	86.0	.1	.1	-4.7	-5.2	17.8
51–4022	Forging machine setters, operators, and tenders, metal and plastic.....	28.1	22.6	.0	.0	-5.5	-19.5	5.5
51–4023	Rolling machine setters, operators, and tenders, metal and plastic.....	34.4	29.0	.0	.0	-5.3	-15.5	6.7
51–4030	Machine tool cutting setters, operators, and tenders, metal and plastic.....	444.3	368.4	.3	.2	-75.9	-17.1	77.3
51–4031	Cutting, punching, and press machine setters, operators, and tenders, metal and plastic.....	236.8	203.5	.2	.1	-33.3	-14.1	46.8
51–4032	Drilling and boring machine tool setters, operators, and tenders, metal and plastic.....	33.0	24.2	.0	.0	-8.9	-26.9	2.7

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
51-4033	Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic.....	92.7	77.9	0.1	0.0	-14.8	-15.9	13.6
51-4034	Lathe and turning machine tool setters, operators, and tenders, metal and plastic.....	55.7	40.8	.0	.0	-14.9	-26.7	9.1
51-4035	Milling and planing machine setters, operators, and tenders, metal and plastic.....	26.2	22.0	.0	.0	-4.1	-15.8	5.1
51-4041	Machinists.....	421.5	402.2	.3	.2	-19.3	-4.6	55.6
51-4050	Metal furnace and kiln operators and tenders.....	34.1	31.0	.0	.0	-3.1	-9.1	6.7
51-4051	Metal-refining furnace operators and tenders.....	19.1	17.4	.0	.0	-1.6	-8.6	3.7
51-4052	Pourers and casters, metal.....	15.1	13.6	.0	.0	-1.5	-9.6	2.9
51-4060	Model makers and patternmakers, metal and plastic.....	17.1	16.1	.0	.0	-1.0	-5.8	1.0
51-4061	Model makers, metal and plastic.....	10.1	9.5	.0	.0	-.6	-5.9	.6
51-4062	Patternmakers, metal and plastic.....	7.0	6.6	.0	.0	-.4	-5.7	.4
51-4070	Molders and molding machine setters, operators, and tenders, metal and plastic.....	158.8	150.7	.1	.1	-8.2	-5.1	32.9
51-4071	Foundry mold and coremakers.....	15.0	13.2	.0	.0	-1.8	-12.0	3.1
51-4072	Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic.....	143.8	137.4	.1	.1	-6.4	-4.4	29.8
51-4081	Multiple machine tool setters, operators, and tenders, metal and plastic.....	86.0	73.4	.1	.0	-12.6	-14.7	16.8
51-4111	Tool and die makers.....	84.3	77.6	.1	.0	-6.7	-8.0	5.1
51-4120	Welding, soldering, and brazing workers.....	466.4	455.9	.3	.3	-10.5	-2.3	142.9
51-4121	Welders, cutters, solderers, and brazers.....	412.3	405.6	.3	.2	-6.7	-1.6	126.3
51-4122	Welding, soldering, and brazing machine setters, operators, and tenders.....	54.1	50.3	.0	.0	-3.8	-7.0	16.6
51-4190	Miscellaneous metalworkers and plastic workers....	134.9	121.8	.1	.1	-13.1	-9.7	34.6
51-4191	Heat treating equipment setters, operators, and tenders, metal and plastic.....	23.2	20.7	.0	.0	-2.5	-10.6	10.5
51-4192	Lay-out workers, metal and plastic.....	8.3	7.3	.0	.0	-1.0	-11.6	1.6
51-4193	Plating and coating machine setters, operators, and tenders, metal and plastic.....	39.5	34.6	.0	.0	-4.9	-12.4	10.6
51-4194	Tool grinders, filers, and sharpeners.....	18.8	17.4	.0	.0	-1.4	-7.5	5.8
51-4199	All other metal workers and plastic workers.....	45.0	41.7	.0	.0	-3.3	-7.4	6.0
51-5000	Printing occupations.....	369.1	331.2	.2	.2	-37.8	-10.3	60.1
51-5010	Bookbinders and bindery workers.....	66.5	53.6	.0	.0	-12.9	-19.3	9.7
51-5011	Bindery workers.....	60.4	48.2	.0	.0	-12.1	-20.1	8.8
51-5012	Bookbinders.....	6.1	5.4	.0	.0	-.7	-12.1	.9
51-5020	Printers.....	302.6	277.6	.2	.2	-25.0	-8.3	50.4
51-5021	Job printers.....	45.7	42.2	.0	.0	-3.5	-7.6	1.7
51-5022	Prepress technicians and workers.....	61.2	50.4	.0	.0	-10.8	-17.7	7.7
51-5023	Printing machine operators.....	195.6	185.0	.1	.1	-10.7	-5.5	41.0
51-6000	Textile, apparel, and furnishings occupations.....	787.5	667.6	.5	.4	-119.9	-15.2	95.5
51-6011	Laundry and dry-cleaning workers.....	235.4	242.0	.2	.1	6.6	2.8	47.6
51-6021	Pressers, textile, garment, and related materials.....	66.6	61.1	.0	.0	-5.5	-8.2	2.9
51-6031	Sewing machine operators.....	212.4	140.9	.1	.1	-71.5	-33.7	11.7
51-6040	Shoe and leather workers.....	14.0	11.0	.0	.0	-3.0	-21.3	1.6
51-6041	Shoe and leather workers and repairers.....	9.2	7.9	.0	.0	-1.3	-14.3	1.1
51-6042	Shoe machine operators and tenders.....	4.8	3.1	.0	.0	-1.7	-34.8	.5
51-6050	Tailors, dressmakers, and sewers.....	66.8	64.7	.0	.0	-2.1	-3.1	7.1
51-6051	Sewers, hand.....	12.2	11.2	.0	.0	-1.0	-8.2	1.3

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
51-6052	Tailors, dressmakers, and custom sewers.....	54.6	53.6	0.0	0.0	-1.1	-2.0	5.8
51-6060	Textile machine setters, operators, and tenders.....	99.5	60.6	.1	.0	-38.8	-39.0	12.7
51-6061	Textile bleaching and dyeing machine operators and tenders.....	16.0	8.8	.0	.0	-7.2	-44.8	1.7
51-6062	Textile cutting machine setters, operators, and tenders.....	19.4	13.4	.0	.0	-6.0	-31.0	3.4
51-6063	Textile knitting and weaving machine setters, operators, and tenders.....	29.2	17.7	.0	.0	-11.5	-39.3	1.9
51-6064	Textile winding, twisting, and drawing out machine setters, operators, and tenders.....	34.9	20.7	.0	.0	-14.2	-40.7	5.8
51-6090	Miscellaneous textile, apparel, and furnishings workers.....	92.9	87.2	.1	.1	-5.7	-6.1	11.8
51-6091	Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers.....	14.1	9.3	.0	.0	-4.8	-33.9	1.5
51-6092	Fabric and apparel patternmakers.....	8.2	6.0	.0	.0	-2.2	-27.2	.9
51-6093	Upholsterers.....	52.7	56.3	.0	.0	3.6	6.8	6.9
51-6099	All other textile, apparel, and furnishings workers	17.9	15.6	.0	.0	-2.3	-12.7	2.5
51-7000	Woodworkers.....	323.3	344.0	.2	.2	20.6	6.4	89.3
51-7011	Cabinetmakers and bench carpenters.....	131.7	143.7	.1	.1	11.9	9.1	41.6
51-7021	Furniture finishers.....	26.5	27.7	.0	.0	1.2	4.5	7.2
51-7030	Model makers and patternmakers, wood.....	3.5	3.5	.0	.0	.0	-.6	.8
51-7031	Model makers, wood.....	1.7	1.7	.0	.0	.0	2.4	.4
51-7032	Patternmakers, wood.....	1.9	1.8	.0	.0	-.1	-3.2	.4
51-7040	Woodworking machine setters, operators, and tenders.....	138.4	145.1	.1	.1	6.7	4.9	33.7
51-7041	Sawing machine setters, operators, and tenders, wood.....	52.6	53.4	.0	.0	.8	1.4	10.2
51-7042	Woodworking machine setters, operators, and tenders, except sawing.....	85.7	91.7	.1	.1	6.0	7.0	23.5
51-7099	All other woodworkers.....	23.3	24.0	.0	.0	.8	3.3	6.0
51-8000	Plant and system operators.....	325.2	332.4	.2	.2	7.2	2.2	102.1
51-8010	Power plant operators, distributors, and dispatchers	50.4	50.6	.0	.0	.2	.4	18.4
51-8011	Nuclear power reactor operators.....	5.0	6.0	.0	.0	1.0	18.9	2.7
51-8012	Power distributors and dispatchers.....	10.0	9.8	.0	.0	-.2	-2.2	3.5
51-8013	Power plant operators.....	35.4	34.8	.0	.0	-.6	-1.6	12.2
51-8021	Stationary engineers and boiler operators.....	41.6	43.8	.0	.0	2.2	5.2	9.2
51-8031	Water and liquid waste treatment plant and system operators.....	113.4	135.9	.1	.1	22.5	19.8	46.9
51-8090	Miscellaneous plant and system operators.....	119.8	102.2	.1	.1	-17.7	-14.7	27.6
51-8091	Chemical plant and system operators.....	45.1	35.8	.0	.0	-9.3	-20.6	10.4
51-8092	Gas plant operators.....	14.9	14.3	.0	.0	-.6	-4.2	3.4
51-8093	Petroleum pump system operators, refinery operators, and gaugers.....	47.1	40.0	.0	.0	-7.1	-15.2	10.8
51-8099	All other plant and system operators.....	12.7	12.1	.0	.0	-.6	-4.7	2.9
51-9000	Other production occupations.....	2,780.6	2,766.8	1.8	1.7	-13.9	-.5	613.9
51-9010	Chemical processing machine setters, operators, and tenders.....	93.8	91.7	.1	.1	-2.1	-2.2	12.1
51-9011	Chemical equipment operators and tenders.....	53.0	46.6	.0	.0	-6.4	-12.1	4.4
51-9012	Separating, filtering, clarifying, precipitating, and still machine setters, operators, and tenders.....	40.8	45.1	.0	.0	4.3	10.6	7.7
51-9020	Crushing, grinding, polishing, mixing, and blending workers.....	222.8	247.2	.1	.1	24.4	11.0	63.0

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
51–9021	Crushing, grinding, and polishing machine setters, operators, and tenders	41.2	40.6	0.0	0.0	–0.6	–1.4	7.0
51–9022	Grinding and polishing workers, hand	40.1	43.2	.0	.0	3.1	7.6	9.9
51–9023	Mixing and blending machine setters, operators, and tenders	141.5	163.5	.1	.1	21.9	15.5	46.1
51–9030	Cutting workers	99.4	92.6	.1	.1	–6.8	–6.8	21.3
51–9031	Cutters and trimmers, hand	24.2	21.0	.0	.0	–3.2	–13.1	5.2
51–9032	Cutting and slicing machine setters, operators, and tenders	75.2	71.6	.0	.0	–3.6	–4.8	16.1
51–9041	Extruding, forming, pressing, and compacting machine setters, operators, and tenders	83.3	95.8	.1	.1	12.5	15.0	29.6
51–9051	Furnace, kiln, oven, drier, and kettle operators and tenders	24.5	22.8	.0	.0	–1.7	–7.0	2.5
51–9061	Inspectors, testers, sorters, samplers, and weighers	464.7	447.8	.3	.3	–16.9	–3.6	77.9
51–9071	Jewelers and precious stone and metal workers	52.1	54.8	.0	.0	2.8	5.3	13.5
51–9080	Medical, dental, and ophthalmic laboratory technicians	95.2	108.3	.1	.1	13.1	13.8	31.5
51–9081	Dental laboratory technicians	46.0	52.4	.0	.0	6.4	13.9	15.3
51–9082	Medical appliance technicians	13.9	15.4	.0	.0	1.5	10.9	4.2
51–9083	Ophthalmic laboratory technicians	35.2	40.4	.0	.0	5.2	14.7	12.0
51–9111	Packaging and filling machine operators and tenders	349.0	346.7	.2	.2	–2.4	–.7	58.5
51–9120	Painting workers	192.7	199.9	.1	.1	7.3	3.8	57.9
51–9121	Coating, painting, and spraying machine setters, operators and tenders	107.8	111.3	.1	.1	3.5	3.3	31.8
51–9122	Painters, transportation equipment	52.2	52.6	.0	.0	.4	.8	14.1
51–9123	Painting, coating, and decorating workers	32.7	36.0	.0	.0	3.3	10.2	11.9
51–9130	Photographic process workers and processing machine operators	73.0	61.2	.0	.0	–11.8	–16.1	18.6
51–9131	Photographic process workers	21.7	22.4	.0	.0	.7	3.1	6.0
51–9132	Photographic processing machine operators	51.3	38.8	.0	.0	–12.5	–24.3	12.6
51–9141	Semiconductor processors	31.6	21.6	.0	.0	–10.0	–31.5	6.5
51–9190	Miscellaneous production workers	998.6	976.3	.7	.6	–22.3	–2.2	221.0
51–9191	Cementing and gluing machine operators and tenders	19.8	17.5	.0	.0	–2.3	–11.4	4.8
51–9192	Cleaning, washing, and metal pickling equipment operators and tenders	18.0	17.4	.0	.0	–.6	–3.5	3.7
51–9193	Cooling and freezing equipment operators and tenders	9.9	9.9	.0	.0	.0	–.4	2.0
51–9194	Etchers and engravers	12.0	12.0	.0	.0	.0	.0	.7
51–9195	Molders, shapers, and casters, except metal and plastic	48.2	49.5	.0	.0	1.3	2.8	25.2
51–9196	Paper goods machine setters, operators, and tenders	103.3	81.0	.1	.0	–22.2	–21.5	21.6
51–9197	Tire builders	21.4	17.6	.0	.0	–3.8	–17.6	7.4
51–9198	Helpers—Production workers	484.0	483.7	.3	.3	–.3	–.1	84.6
51–9199	All other production workers	282.0	287.5	.2	.2	5.6	2.0	70.9
53–0000	Transportation and material moving occupations	9,825.5	10,216.6	6.5	6.1	391.1	4.0	2,856.5
53–1000	Supervisors, transportation and material moving workers	406.1	405.0	.3	.2	–1.0	–.3	77.4
53–1011	Aircraft cargo handling supervisors	4.9	5.3	.0	.0	.4	7.2	1.2

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008-18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
53-1021	First-line supervisors/managers of helpers, laborers, and material movers, hand	183.5	190.2	0.1	0.1	6.7	3.6	38.5
53-1031	First-line supervisors/managers of transportation and material-moving machine and vehicle operators	217.6	209.5	.1	.1	-8.1	-3.7	37.7
53-2000	Air transportation occupations	150.4	168.5	.1	.1	18.2	12.1	69.2
53-2010	Aircraft pilots and flight engineers	116.0	129.7	.1	.1	13.7	11.8	53.1
53-2011	Airline pilots, copilots, and flight engineers	76.8	83.3	.1	.1	6.4	8.4	32.5
53-2012	Commercial pilots	39.2	46.5	.0	.0	7.3	18.5	20.6
53-2020	Air traffic controllers and airfield operations specialists	34.3	38.8	.0	.0	4.5	13.0	16.1
53-2021	Air traffic controllers	26.2	29.6	.0	.0	3.4	13.0	12.3
53-2022	Airfield operations specialists	8.1	9.2	.0	.0	1.1	13.0	3.8
53-3000	Motor vehicle operators	4,170.9	4,551.8	2.8	2.7	380.9	9.1	1,123.6
53-3011	Ambulance drivers and attendants, except emergency medical technicians	22.2	24.5	.0	.0	2.3	10.3	6.2
53-3020	Bus drivers	647.5	691.4	.4	.4	43.9	6.8	157.0
53-3021	Bus drivers, transit and intercity	193.9	209.9	.1	.1	16.0	8.2	49.9
53-3022	Bus drivers, school	453.6	481.5	.3	.3	27.9	6.2	107.1
53-3030	Driver/sales workers and truck drivers	3,189.3	3,481.2	2.1	2.1	291.9	9.2	862.5
53-3031	Driver/sales workers	406.4	424.1	.3	.3	17.7	4.4	90.4
53-3032	Truck drivers, heavy and tractor-trailer	1,798.4	2,031.3	1.2	1.2	232.9	12.9	554.6
53-3033	Truck drivers, light or delivery services	984.5	1,025.9	.7	.6	41.4	4.2	217.5
53-3041	Taxi drivers and chauffeurs	232.3	268.4	.2	.2	36.1	15.5	77.3
53-3099	All other motor vehicle operators	79.6	86.3	.1	.1	6.7	8.4	20.6
53-4000	Rail transportation occupations	130.5	142.4	.1	.1	12.0	9.2	54.9
53-4010	Locomotive engineers and operators	51.1	56.2	.0	.0	5.1	9.9	21.6
53-4021	Railroad brake, signal, and switch operators	25.6	28.0	.0	.0	2.4	9.4	10.7
53-4031	Railroad conductors and yardmasters	41.3	44.1	.0	.0	2.8	6.9	17.0
53-4041	Subway and streetcar operators	7.7	9.1	.0	.0	1.4	18.8	3.9
53-4099	Rail transportation workers, all other	4.8	5.0	.0	.0	.2	4.2	1.8
53-5000	Water transportation occupations	81.1	93.1	.1	.1	12.0	14.8	46.3
53-5011	Sailors and marine oilers	32.9	36.7	.0	.0	3.8	11.7	17.9
53-5020	Ship and boat captains and operators	36.8	42.8	.0	.0	6.0	16.3	21.3
53-5021	Captains, mates, and pilots of water vessels	33.1	38.8	.0	.0	5.7	17.3	19.5
53-5022	Motorboat operators	3.7	4.0	.0	.0	.3	8.1	1.8
53-5031	Ship engineers	11.5	13.6	.0	.0	2.1	18.6	7.0
53-6000	Other transportation workers	302.9	318.5	.2	.2	15.6	5.2	127.8
53-6011	Bridge and lock tenders	4.7	5.1	.0	.0	.4	8.4	2.1
53-6021	Parking lot attendants	136.2	141.9	.1	.1	5.7	4.2	54.7
53-6031	Service station attendants	83.3	81.5	.1	.0	-1.8	-2.2	34.7
53-6041	Traffic technicians	7.4	8.2	.0	.0	.8	10.3	3.4
53-6051	Transportation inspectors	26.9	31.9	.0	.0	4.9	18.3	11.3
53-6099	All other related transportation workers	44.3	49.9	.0	.0	5.6	12.7	21.5
53-7000	Material moving occupations	4,583.7	4,537.2	3.0	2.7	-46.5	-1.0	1,357.3
53-7011	Conveyor operators and tenders	41.0	37.2	.0	.0	-3.8	-9.3	11.9
53-7021	Crane and tower operators	43.9	40.9	.0	.0	-3.0	-6.7	10.2
53-7030	Dredge, excavating, and loading machine operators	82.3	88.6	.1	.1	6.3	7.7	30.6
53-7031	Dredge operators	2.2	2.4	.0	.0	.2	7.0	.8
53-7032	Excavating and loading machine and dragline operators	75.7	82.1	.1	.0	6.5	8.6	28.5
53-7033	Loading machine operators, underground mining	4.4	4.1	.0	.0	-.3	-7.4	1.3

See footnotes at end of table.

Appendix: Continued—Employment and job openings by occupation and occupational group, 2008 and projected 2018

(Numbers in thousands)

Matrix code	2008 National Employment Matrix title	Employment				Change, 2008–18		Total job openings due to growth and replacement needs ¹
		Number		Percent distribution		Numeric	Percent	
		2008	2018	2008	2018			
53–7041	Hoist and winch operators	2.8	2.6	0.0	0.0	–0.2	–8.0	0.8
53–7051	Industrial truck and tractor operators	610.3	627.0	.4	.4	16.7	2.7	198.6
53–7060	Laborers and material movers, hand	3,565.7	3,485.4	2.4	2.1	–80.2	–2.3	1,015.5
53–7061	Cleaners of vehicles and equipment	348.9	352.5	.2	.2	3.6	1.0	127.7
53–7062	Laborers and freight, stock, and material movers, hand	2,317.3	2,298.6	1.5	1.4	–18.7	–.8	745.8
53–7063	Machine feeders and offbearers	140.6	109.5	.1	.1	–31.2	–22.2	15.9
53–7064	Packers and packagers, hand	758.8	724.8	.5	.4	–34.0	–4.5	126.1
53–7070	Pumping station operators	32.5	24.5	.0	.0	–8.0	–24.7	9.5
53–7071	Gas compressor and gas pumping station operators	4.3	3.4	.0	.0	–.9	–20.6	1.2
53–7072	Pump operators, except wellhead pumpers	9.7	7.8	.0	.0	–1.9	–19.6	2.8
53–7073	Wellhead pumpers	18.6	13.3	.0	.0	–5.3	–28.4	5.4
53–7081	Refuse and recyclable material collectors	149.0	176.7	.1	.1	27.8	18.6	71.1
53–7111	Shuttle car operators	3.1	3.0	.0	.0	–.1	–4.0	.9
53–7121	Tank car, truck, and ship loaders	12.0	11.2	.0	.0	–.9	–7.4	3.5
53–7199	Material moving workers, all other	41.0	40.0	.0	.0	–1.0	–2.4	4.7

¹ Total job openings represents the sum of employment increases and replacement needs. If employment change is negative, job openings due to growth are zero and total job openings equals replacement needs.

² Codes 11–0000 through 13–0000 in the 2000 *Standard Occupational Classification* (SOC).

³ Codes 15–0000 through 29–0000 in the 2000 *Standard Occupational Classification* (SOC).

⁴ Codes 31–0000 through 39–0000 in the 2000 *Standard Occupational Classification* (SOC).

NOTE: Data may not sum to totals or to 100 percent because of rounding.