

# Occupational Projections and Training Data

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Edition



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# Preface

This statistical and research supplement to the 2006–07 Occupational Outlook Handbook (OOH) presents detailed, comprehensive statistics used in preparing the Handbook. In discussing how the data are prepared and other topics, this supplement offers information that is valuable to training officials, education planners, vocational and employment counselors, jobseekers, and others interested in occupational information. This edition of the supplement is the 18th in a series dating back to 1971 and is available on the Internet from [www.bls.gov/emp/optd/home.htm](http://www.bls.gov/emp/optd/home.htm).

Chapter I provides an update on the two educational and training classification systems used by the Office of Occupational Statistics and Employment Projections. The first system designates the category that best describes the most significant source of postsecondary education or training for each detailed occupation. The second assigns an education cluster to each occupation, on the basis of on the educational attainment distribution of 25- to 44-year-olds as captured by data drawn from the Current Population Survey (CPS). Updated results from the two systems are compared and discussed.

Chapter II introduces a new analytical product on the topical issue of “offshoring,” in the context of service-providing occupations. A methodology was devised to identify occupations potentially susceptible to offshoring and address the issue more consistently in the 2006–07 OOH and 2004–14 occupational employment projections than in the past.

Chapter III discusses the structure of the 2004–14 National Employment Matrix—on which the 2004–14 employment projections are based—including the addition of five-digit North American Industry Classification System data for increased industry detail. This chapter also includes the National Employment Matrix occupational and industry directories

Chapter IV presents detailed information about all occupations in the National Employment Matrix. In addition to providing statistics on employment and employment changes, growth rates, job openings, and self-employed workers, table IV–1 includes rankings, from very low to very high, for a number of other variables. The table also identifies the most significant source of postsecondary education or training and provides information on the educational attainment

distribution of 25- to 44-year-olds for each occupation. The table supplies the user with a comprehensive picture of a specific occupation and makes it easier to compare the attributes of different occupations. The data used in preparing the table are available electronically for users who want to arrange such data differently for analytical purposes.

Changes in industry employment and in the utilization of an occupation within an industry affect occupational employment. Chapter V presents information about the factors driving these changes. Table V–1 provides 2004–14 projections of industry output and employment.

Chapter VI explains the development and uses of data on occupational replacement needs. Projected replacement rates and estimates of replacement needs for 2004–14 are presented in Table VI–5.

Finally, data from the National Center for Education Statistics on completions of institutional education and training programs by field of study appear in Chapter VII.

In all cases, national data are provided. Data for States and local areas may be obtained from sources identified in the appendix.

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# Contents

<i>Chapter</i>	<i>Page</i>
I. Education and Training Classification Systems .....	1
Understanding the 11 education and training categories.....	1
The educational attainment cluster system.....	1
Projecting education and training requirements .....	2
Results and applications of the two classification systems.....	3
The educational attainment distribution of occupations: a note on methodology .....	5
II. Accounting for Offshoring in Occupational Employment Projections .....	12
Reviewing the research.....	13
The offshoring analysis system .....	12
Results .....	13
Future steps.....	14
III. The 2004–14 National Employment Matrix Structure.....	16
2004 base-year employment matrix .....	16
Change-factor employment matrix .....	16
2014 projected-year matrix.....	16
Classification system changes .....	17
The 2004–14 National Employment Matrix occupational directory .....	17
The 2004–14 National Employment Matrix industry directory .....	18
IV. Selected Occupational Data, 2004 and Projected 2014 .....	42
Data presented .....	42
Using ranked information .....	45
V. Factors Affecting Industry Employment and Occupational Utilization, 2004–14.....	91
Industry employment.....	91
Occupational utilization.....	91
VI. Estimating Occupational Replacement Needs .....	147
Concepts and definitions.....	147
Developing measures of total separations .....	149
Developing measures of net separations.....	150
Projected replacement rates .....	151
Replacement rates based on the Occupational Employment Statistics survey .....	153
Frequently asked questions about replacement needs .....	154
VII. Education and Training Statistics: Completions, by field of study .....	174
Appendix. Sources of State and Local Labor Market and Career Information .....	206

Tables:

I-1.	Employment and total job openings by six education clusters, 2004–14 .....	4
I-2.	Employment and total job openings by three education clusters, 2004–14 .....	4
I-3.	Employment in 2004, by education or training category and education cluster .....	5
I-4.	Projected employment change, 2004–14, by education or training category and education cluster ...	6
I-5.	High-wage, high-growth occupations, by educational attainment cluster and earnings .....	7
II-1.	Occupations susceptible to significant risk of offshoring .....	14
III-1.	National Employment Matrix occupational directory, 2004 .....	22
III-2.	National Employment Matrix industry directory, 2004 .....	33
IV-1.	Occupational employment and job openings data, 2004–14, and worker characteristics, 2004.....	46
IV-2.	Employment for occupations not presented in the National Employment Matrix, 2004.....	90
V-1.	Employment and output by industry, 1994, 2004, and projected 2014.....	92
V-2.	Factors affecting industry output and employment, 2004–14 .....	104
V-3.	Factors changing occupational utilization, 2004–14.....	124
VI-1.	Net separations for registered nurses and for waiters and waitresses, by age group, 1997–2002 ...	150
VI-2.	Net separations in selected teaching occupations, by age group, 1997–2002 .....	151
VI-3.	Net separations in selected teaching occupations, adjusted summary occupation, by age group, 1997–2002 .....	152
VI-4.	Net replacement data for registered nurses, by age group, 2002–12 .....	153
VI-5.	Total and net replacement rates and annual average replacement needs, 2004–14.....	155
VII-1.	Earned awards and degrees, by field of study, 2003–04 .....	175

Figure:

1.	Total and net occupational entrants and separations, January 2003 to January 2004 .....	148
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# Chapter I. Education and Training Classification Systems

This chapter of the Occupational Projections and Training Data (OPTD) explains the Bureau's two education and training classification systems, which together categorize the more than 750 occupations for which employment projections are published by the level of education or training generally required or attained by people in those occupations. The first system assigns occupations to 1 out of 11 education and training categories that represents the most significant source of postsecondary education or training needed to become proficient in that occupation. This education and training category system, first used during the development of the 1994–2005 employment projections, is an important source for career advice on individual occupations. However, the information it presents often is misinterpreted and has unintentionally resulted in misleading information about the educational requirements of projected employment growth. This problem led to the creation of a second classification system, first described in Chapter I of the 2004–05 edition of the OPTD.

The second system, the educational attainment clusters system, is a more data-driven analytical product that describes the educational attainment of 25- to 44-year-olds in each of the occupations for which employment projections are prepared. The data in this system provide important information that complements the most significant single source of postsecondary education or training category assigned by BLS analysts. The data also make for a more complete picture of the education and training requirements for each occupation. The clusters in the system are used to construct estimates of the number of projected jobs that will be filled by those with a high school diploma or less, those with some college, and those with a bachelor's degree or higher. High-wage, high-growth occupations for the 2004–14 projection period are presented in table I-5, sorted by educational attainment cluster.

## Understanding the 11 education and training categories

BLS identifies 11 education and training categories that describe, for each occupation, the most significant postsecondary education or training pathway to employment in that occupation. To assign occupations to these categories, BLS economists acquire a considerable body of knowledge about occupations on the basis of data from both the Bureau itself and other government and private organizations, as well as through interviews with representatives of professional and trade associations, with representatives of unions, and with educators and training experts, among other sources. For some occupations, such as physicians and lawyers, the edu-

cation and training preparation is straightforward, because it is established by government laws and regulations. For other occupations, such as computer programmers or industrial machinery repairers, jobs may vary considerably in their educational and training requirements. When an occupation has more than one path of entry, BLS identifies the one that research suggests is most preferred by employers.

The 11 categories of postsecondary education or training are as follows:

1. First professional degree
2. Doctoral degree
3. Master's degree
4. Bachelor's or higher degree, plus work experience
5. Bachelor's degree
6. Associate degree
7. Postsecondary vocational award
8. Work experience in a related occupation
9. Long-term on-the-job training
10. Moderate-term on-the-job training
11. Short-term on-the-job training

(For a more detailed discussion of these categories see chapter IV, page 42.) By construction, these categories are intended to be mutually exclusive and exhaustive. The order in which the categories are listed, from top to bottom, reflects a range from highest to lowest entry requirements. The category system is simple and easy to understand and to use in providing career advice.

What this classification system does not tell us, however, is the extent to which there may be multiple paths of entry into an occupation. For example, the moderate and long-term on-the-job training categories often have been misinterpreted as being aimed primarily at those whose highest degree is a high school diploma. Although this may be true to a large degree, it can be misleading as to the educational hiring preferences of employers. In any number of occupations that put a new employee through lengthy on-the-job training, it is not uncommon to find that employers typically try to hire individuals with at least some college education (or even a bachelor's degree). The point is that the link to the educational attainment preferences of employers is not simple and automatic. To get a better description of the educational demands of a particular occupation, a second measure is necessary.

## The educational attainment cluster system

The educational attainment cluster system categorizes occu-

pations on the basis of educational attainment of 25- to 44-year-olds working in the occupation, as reflected in data from the Current Population Survey (CPS). (See “The educational attainment distribution of occupations: A note on methodology” on page 6). The system provides a natural hierarchical sorting of occupations that reflects increasing levels of skill, education, and training. It also allows for occupations to fall into more than one category at a time; such occupations are called “mixture” occupations.

Educational attainment data for 25- to 44-year-olds are used instead of a broader sample of ages because the educational attainment of younger workers in a given occupation often is higher than that of older workers, who may have entered the occupation when requirements were lower. Because one of the basic purposes of the employment projections program is to provide career advice, the educational attainment of newer entrants in an occupation is more useful.

In this system, occupations are grouped on the basis of the percentage of workers who have a high school diploma or less, some college or an associate degree, or a college diploma (bachelor’s degree) or higher. In accordance with the percentage of workers falling into each of these three educational levels, the occupation is assigned to one of six education clusters. For example, within an occupation, if more than 60 percent of workers have a high school diploma or less, less than 20 percent have some college or an associate degree, and no more than 20 percent have a bachelor’s degree or higher, that occupation is considered a high school (HS) occupation. However, if more than 20 percent have a high school degree or less, more than 20 percent have attended some college or held an associate degree, and less than 20 percent have a bachelor’s degree or higher, the occupation is considered to be a high school/some college (HS/SC) occupation. Twenty percent was determined to be the key level of significance in classifying these occupations. (See “The educational attainment distribution of occupations: A note on methodology” on page 6.) On the basis of this system, occupations were put into one of the six education clusters shown in exhibit 1.

The addition of information on the distribution of educational attainment for each occupation highlights the fact that often there are multiple pathways into an occupation. For example, according to 2002–04 CPS data, 51.4 percent of electricians aged 25 to 44 years are high school graduates whereas 42.8 percent have some college or more as their highest level of educational attainment. Besides being more data driven, this educational cluster system, which assigns electricians to the high school/some college (HS/SC) cluster, has the advantage of being able to capture this split. However, it has the disadvantage of being less able to address the role that knowledge and skills acquired outside the formal education system play in career preparation. In this respect, the category classification system, which puts electricians into the long-term on-the-job training category, better addresses the skill requirements needed for a job. But that system often is misinterpreted to imply that the job requires only a high school education when in many cases it actually requires more. For

a full listing of the postsecondary education or training categories and education cluster assignments for all 754 detailed National Employment Matrix occupations, see table IV–1 in Chapter IV of this edition of OPTD.

### Projecting education and training requirements

How many jobs are projected to be filled by those with a high school diploma or less, those with some college, and those with a bachelor’s degree or higher? The use of the education cluster system allows us to make these projections confidently. Although challenging, the methodology accompanying the estimates is transparent and will provide the user with the freedom to test the sensitivity of the results to alternative specifications.

The educational attainment cluster system allows for projections by the 6 education clusters, as well as by the 3 major education groups (high school or less, some college, bachelor’s degree or higher). To produce projections by educational attainment cluster, all 754 detailed occupations were assigned to one of the 6 clusters. The employment projections of each of these occupations were combined, and the results are presented in table I–1, which shows that an increasing number of jobs are expected to be filled by those with some college or more and that fewer jobs will be filled by those with a high school degree or less. Specifically, 12.8 percent of jobs in 2014 are projected to be filled by those with a high school degree or less, down from 13.2 percent in 2004. In contrast, a greater number of jobs in 2014 will be filled by those with mainly a college degree or higher: 12.4 percent, versus 11.6 percent in 2004. Still, the highest proportion of jobs in both 2004 and 2014, 46.7 percent and 45.4 percent,

**Exhibit 1. Definitions of education clusters**

Education cluster	Percent of employees aged 25 to 44 in the occupation whose highest level of educational attainment is—		
	High school or less	Some college (including associate degree)	Bachelor's degree or higher
High school occupations (HS)	Greater than or equal to 60 percent	Less than 20 percent	Less than 20 percent
High school/some college occupations (HS/SC)	Greater than or equal to 20 percent	Greater than or equal to 20 percent	Less than 20 percent
Some college occupations (SC)	Less than 20 percent	Greater than or equal to 60 percent	Less than 20 percent
High school/some college/college occupations (HS/SC/C)	Greater than or equal to 20 percent	Greater than or equal to 20 percent	Greater than or equal to 20 percent
Some college/college occupations (SC/C)	Less than 20 percent	Greater than or equal to 20 percent	Greater than or equal to 20 percent
College occupations (C)	Less than 20 percent	Less than 20 percent	Greater than or equal to 60 percent

respectively, falls into the high school/some college (HS/SC) category.

This educational attainment cluster system also serves as the basis for projecting the number of jobs that fall into the 3 major educational attainment groups. The system is used to define the proportion of jobs within each cluster that require a high school diploma or less, some college, or a bachelor's degree or higher. Projected employment change in an occupation is assigned to the 3 groups on the basis of the education cluster assigned to the occupation. If the occupation is a high school (HS), some college (SC), or college (C) occupation, all jobs are projected to require this level of educational attainment. If the occupation is a "mixture occupation," projected jobs are distributed on the basis of the existing ratio of workers that fall into the educational attainment groups making up the cluster.

For example, for college (C) occupations (those with 60 percent or more having a bachelor's degree or higher), it is assumed that all jobs in the occupation require a college degree. The assignments of jobs for high school occupations and for occupations requiring some college are similarly defined. For a mixture occupation, such as some college/college (SC/C), it is assumed that all jobs in the cluster either require some college or a bachelor's degree or higher. To calculate the number of "some college" jobs in the occupation, one computes the ratio of the number of employees in that occupation who have some college to the number of employees who have some college or a bachelor's degree or higher. The number of "some college" jobs in the occupation is the value of this ratio, multiplied by the employment level of the occupation. (This procedure also is applied to the other mixture occupations).

The employment level used depends on the period of interest. In this analysis, the technique is applied to National Employment Matrix data for 2004, as well as projected data for the 2004–14 period.

**Exhibit 2. Assignment of educational attainment groups**

Education cluster	Proportion of projected jobs assigned to three educational attainment groups
HS jobs	All projected jobs are considered "high school" jobs.
HS/SC jobs	Projected jobs are assigned to "high school" or "some college" on the basis of the 2004 proportion of workers in the cluster with a high school degree or less or with some college.
SC jobs	All projected jobs are considered "some college" jobs.
HS/SC/C jobs	Projected jobs are assigned to all three groups on the basis of the 2004 proportion of workers in the cluster with each level of educational attainment.
SC/C jobs	Projected jobs are assigned to "some college" or "college" on the basis of the 2004 proportion of workers in the cluster with some college or with a college degree or higher.
C jobs	All projected jobs are considered college jobs.
HS/C	Projected jobs are treated the same as HS/SC/C jobs.

Exhibit 2 summarizes how employment growth is assigned to the three educational attainment groups of high school or less (high school), some college (some college), and bachelor's degree or higher (college) with the educational attainment cluster classification system.

Now, what does this assignment method reveal about the projections of employment by educational attainment over the 2004–14 period? Table I–2 answers this question. The projected change in employment for each of the 754 detailed occupations was assigned to the three educational attainment groups (high school or less, some college, and bachelor's degree or higher), and table I–2 shows that, among the three

**Table I–1. Employment and total job openings by six education clusters, 2004–14**  
[Numbers in thousands]

Education cluster	Employment				Change			Total job openings due to growth and net replacements, 2004–14 <sup>1</sup>	
	Number		Percent distribution		Number	Percent distribution	Percent	Number	Percent distribution
	2004	2014	2004	2014					
Total .....	145,612	164,540	100.0	100.0	18,928	100.0	13.0	54,680	100.0
High school occupations .....	19,164	21,100	13.2	12.8	1,935	10.2	10.1	6,834	12.5
High school/some college occupations .....	67,944	74,671	46.7	45.4	6,727	35.5	9.9	25,220	46.1
Some college occupations .....	218	279	.1	.2	61	.3	27.9	86	.2
High school/some college/college occupations .....	24,894	28,019	17.1	17.0	3,126	16.5	12.6	9,078	16.6
Some college/college occupations .....	16,470	20,031	11.3	12.2	3,561	18.8	21.6	6,563	12.0
College occupations .....	16,922	20,440	11.6	12.4	3,517	18.6	20.8	6,898	12.6

<sup>1</sup> Total job growth are zero and total job openings equal net replacements.  
NOTE: Detail may not equal total or 100 percent due to rounding.

**Table I-2. Employment and total job openings by three education clusters, 2004-14**

[Numbers in thousands]

Education cluster	Employment				Change			Total job openings due to growth and net replacements, 2004-14 <sup>1</sup>	
	Number		Percent distribution		Number	Percent distribution	Percent	Number	Percent distribution
	2004	2014	2004	2014					
Total .....	145,612	164,540	100.0	100.0	18,928	100.0	13.0	54,680	100.0
High school graduate or less.....	68,530	75,453	47.1	45.9	6,923	36.6	10.1	25,294	46.3
Some college .....	41,526	46,772	28.5	28.4	5,246	27.7	12.6	15,451	28.3
Bachelor's degree or higher .....	35,556	42,315	24.4	25.7	6,759	35.7	19.0	13,935	25.5

<sup>1</sup> Total job

growth are zero and total job openings equal net replacements.

NOTE: Detail may not equal total or 100 percent due to rounding

groups, jobs projected to go to those with a high school degree or less will predominate—accounting for 45.8 percent of all jobs in 2014 and 36.6 percent of new jobs created between 2004 and 2014. However, the fastest percentage growth in new jobs, 19.0 percent, will go to those with a bachelor’s degree or higher. Taking replacement needs into consideration reveals that a greater proportion of total job openings are projected to be filled by workers with at least some college, rather than by those with a high school degree or less: approximately 53.7 percent of projected job openings will be filled by someone with some college or a bachelor’s degree or higher, as opposed to 46.3 percent with a high school degree or less. Indeed, this figure is most likely an underestimate, because the assignment method described assumes no upgrading of educational requirements for occupations over the projection period.

In contrast to the foregoing results, using the 11 education and training categories set forth earlier leads to a very

different education profile for projected employment change: assigning all of the employment in occupations falling into categories 1-7 to “some college or more” results in only 45.1 percent of projected employment change falling into this education classification.

### Results and applications of the two classification systems

Combining the two classification systems—the 11 education and training categories and the 6 educational attainment clusters—uses the strengths of each system to provide further insight into the education and training requirements of jobs. For example, both stonemasons and maids and housekeeping cleaners are high school (HS) occupations. However, stonemasons have long-term on-the-job training, and maids and housekeeping cleaners have short-term on-the-job training. Their respective earnings, in part, reflect the differences in training requirements: stonemasons’ median annual earnings

**Table I-3. Employment in 2004, by education or training category and education cluster**

[Numbers in thousands]

Postsecondary education or training category, employment 2004	Education cluster, employment 2004											
	HS		HS/SC		SC		HS/SC/C		SC/C		C	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total .....	19,164	13.2	67,944	46.7	218	.1	24,894	17.1	16,470	11.3	16,922	11.6
Short-term on-the-job training .....	12,924	8.9	31,594	21.7	5	.0	6,908	4.7	352	.2	-	-
Moderate-term on-the-job training .....	4,413	3.0	18,445	12.7	-	-	5,364	3.7	718	.5	9	.0
Long-term on-the-job training .....	1,674	1.1	7,225	5.0	-	-	881	.6	1,171	.8	74	.1
Work experience in a related occupation .....	154	.1	4,022	2.8	-	-	6,328	4.3	553	.4	-	-
Postsecondary vocational award .....	-	-	5,589	3.8	192	.1	1,387	1.0	657	.5	88	.1
Associate degree .....	-	-	850	.6	21	.0	383	.3	4,155	2.9	-	-
Bachelor's degree .....	-	-	-	-	-	-	1,754	1.2	6,054	4.2	9,231	6.3
Bachelor's or higher degree, plus work experience .....	-	-	220	.2	-	-	1,888	1.3	2,680	1.8	1,713	1.2
Master's degree .....	-	-	-	-	-	-	-	-	107	.1	2,040	1.4
Doctoral degree.....	-	-	-	-	-	-	-	-	22	.0	1,917	1.3
First professional degree...	-	-	-	-	-	-	-	-	-	-	1,849	1.3

**Table I-4. Projected employment change, 2004–14, by education or training category and education cluster**

[Numbers in thousands]

Postsecondary education or training category, projected employment change 2004–14	Education cluster, projected employment change 2004–14											
	HS		HS/SC		SC		HS/SC/C		SC/C		C	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total .....	1,935	10.2	6,727	35.5	61	.3	3,126	16.5	3,561	18.8	3,517	18.6
Short-term on-the-job training .....	1,622	8.6	3,337	17.6	1	.0	883	4.7	68	.4	-	-
Moderate-term on-the-job training .....	104	.5	1,361	7.2	-	-	846	4.5	153	.8	2	.0
Long-term on-the-job training .....	200	1.1	440	2.3	-	-	121	.6	184	1.0	12	.1
Work experience in a related occupation .....	10	.1	479	2.5	-	-	452	2.4	116	.6	-	-
Postsecondary vocational award .....	-	-	970	5.1	52	.3	248	1.3	115	.6	19	.1
Associate degree .....	-	-	132	.7	7	-	53	.3	1,167	6.2	-	-
Bachelor's degree .....	-	-	-	-	-	-	206	1.1	1,253	6.6	1,880	9.9
Bachelor's or higher degree, plus work experience .....	-	-	9	.0	-	-	317	1.7	483	2.6	273	1.4
Master's degree .....	-	-	-	-	-	-	-	-	16	.1	390	2.1
Doctoral degree.....	-	-	-	-	-	-	-	-	6	.0	588	3.1
First professional degree...	-	-	-	-	-	-	-	-	-	-	354	1.9

of \$34,980 in May 2004 were more than double the \$16,900 median annual earnings of maids and housekeeping cleaners. Similar differences exist within each education and training category.

Both stonemasons and police and sheriff's patrol officers generally require long-term on-the-job training. However, their educational attainment is quite different. Most stonemasons' highest level of educational attainment is a high school diploma or less; most police and sheriff's patrol officers have attended some college or completed college. Compared with stonemasons' median annual earnings of \$34,980 in May 2004, police and sheriff's patrol officers' median annual earnings of \$45,210 were higher. Again, the respective earnings in each of these two occupations, reflect in part, differences in educational attainment.

Table I-3 shows the distribution of 2004 total employment by both most significant source of postsecondary education or training category and educational attainment cluster. Table I-4 shows the same information, but focuses on how projected employment change will be distributed. Under both classification systems, the distribution of employment is expected to shift toward higher levels of education and training. Because projected job growth is faster in occupations classified into education or training categories specifying postsecondary vocational awards or higher levels of education, these jobs will gain relative share over the projection period.

Likewise, the proportion of jobs in occupations with educational attainment clusters specifying some college or higher will increase by 2014. This proportion is projected to grow in occupations that fall into 3 of the 4 highest educational attainment clusters: some college (SC), some col-

lege/college (SC/C) and college (C). For example, "college jobs" make up 11.6 percent of existing jobs, but will account for 18.6 percent of projected employment change. Employment in the full-mixture category, high school/some college/college (HS/SC/SC), is projected to increase slightly more slowly than average—by 12.6 percent, compared with 13.0 percent overall—resulting in a slightly smaller proportion of 2014 employment.

As previously mentioned, for each National Employment Matrix occupation, the most significant source of education or training, the educational attainment distribution, and the educational attainment cluster are listed in table IV-1 in Chapter IV of this edition of OPTD. However, table I-5 in the current chapter sorts occupations by educational cluster and, within each cluster, lists only those occupations which are both growing faster than the average for total employment—13.0 percent—and have annual earnings above the May 2004 median—\$28,770. These "high-wage, high-growth" occupations should provide good job opportunities for new entrants.

Although high-wage, high-growth occupations tend to be at the higher end of the educational spectrum, there are jobs which fit that description at every level of education and training. Many of the high-wage, high-growth occupations included in the high school (HS) cluster, such as tile and marble setters and reinforcing iron and rebar workers, are in construction. High-wage, high-growth occupations in the high school/some college (HS/SC) cluster are quite varied, but many (such as plumbers) also are construction occupations, and many are maintenance and repair occupations (for example, locksmiths) or transportation occupations (for instance, bus drivers). The high school/some college/college (HS/SC/

C) cluster includes high-wage/high-growth occupations in sales, such as real estate sales agents and sales representatives, as well as several technical, managerial, and other professional occupations, such as biological technicians, lodging managers, and cost estimators. Some college/college (SC/C) occupations that make the high-wage, high-growth list include occupations such as police officers, as well as some management occupations, such as chief executives, financial managers, and administrative services managers. Not surprisingly, high-wage, high-growth occupations in the college

(C) cluster include mostly professional occupations, such as teachers, engineers, and accountants and auditors.

Certainly, there are numerous other criteria that can be used to define high-wage, high-growth occupations, both in term of changing the earnings and employment growth cut-offs used or by including additional or alternative characteristics of occupations. The data provided in this publication give analysts the ability to sort occupations on the basis of a number of alternative specifications.

## The educational attainment distribution of occupations: A note on methodology

The Office of Occupational Statistics and Employment Projections (OOSEP) estimates the educational attainment distribution of 25- to 44-year-olds for each of the detailed National Employment Matrix occupations, on the basis of data drawn from the Current Population Survey (CPS). The CPS surveys about 60,000 households each month and collects demographic and employment information on the civilian noninstitutional population aged 16 and older.

Publishing detailed educational attainment data requires a large sample size. To create publishable estimates of educational attainment, a sample with 3 years (2002–04) of combined data was used. With a 3 year sample, weighted CPS employment in the occupation must be at least 10,000 to be publishable. Of the 502 detailed CPS occupations, 404 reached this level of significance. The remaining 98 CPS occupations fell short of that minimum level. To reach a publishable level for those 98 occupations, the sample was expanded to include an additional 2 years of CPS data, covering the 2000–04 period. By expanding the sample, the publishable level of weighted employment fell from 10,000 to 7,000. Expanding the sample in this manner created publishable data for an additional 29 occupations, but still leaving 69 occupations without publishable data. Next, the age range of the sample was expanded from 25- to 44-year-olds to the 25-years-and-older age group for the 2000–04 period. Expanding the age range to 25 years and older created data for 33 more occupations, leaving 36 occupations without publishable data. The next step used to expand the 2000–04 sample was to include all workers aged 16 years and older in an occupation, instead of just those aged 25 and older. Expanding the age range to 16 years and older created data for another 5 occupations, leaving 31 without data. For the remaining 31 occupations, the original dataset that covered 25- to 44-year-olds for the 2002–04 period was used, but the educational attainment distribution for the occupation in question was replaced with data for the appropriate broader occupational group. The allocations underlying all of these estimates are available upon request.

Occupational information in the CPS is classified under a taxonomy that, while consistent with the 2000 Standard Occupational Classification (SOC) system, does not provide the full level of occupational detail available from the National Employment Matrix. The CPS occupational classification includes 502 occupations, while the 2004–14 National Employment Matrix published projections for 754 detailed SOC-consistent

occupations.

Because the CPS includes fewer occupations than the National Employment Matrix, proxy data must be used for some Matrix occupations. For example, marketing and sales managers are a single occupation in the CPS, but are two distinct occupations in the Matrix. In this case, Matrix data from 2004 were used to determine the prorated employment share of marketing managers out of total Matrix employment for marketing and sales managers combined. The number of marketing managers with some college was determined by multiplying the number of CPS-based marketing and sales managers by the computed share. The procedure for determining the employment levels by educational attainment for sales managers was applied in a similar fashion. Conversely, a few Matrix occupations represent aggregations of two or more CPS-based occupations. For each of these, the employment level by education was obtained by summing the educational attainment levels of each of the underlying CPS-based occupations.

Determining the 20-percent level of significance, described in exhibit 1, for the education cluster system required detailed research. When the educational cluster system was first developed and preliminary results were examined, three levels of significance were initially proposed: 15 percent, 20 percent, and 25 percent.

The first step in determining which level of significance to use involved studying the occupations that changed education cluster when the level of significance changed from 15 percent, to 20 percent, to 25 percent. Of the occupations that changed categories, most did so between the 15- and 20-percent levels of significance. Far fewer occupations shifted categories between the 20- and 25-percent levels of significance. As the level of significance rises, the number of occupations in mixture clusters—for example, high school/some college (HS/SC), as opposed to high school (HS)—falls. An initial examination of the data suggested that the 20-percent level of significance provided the most logical and reasonable cluster assignment for occupations with well-defined training paths.

The selection of the 20-percent level of significance also relied on the occupational expertise of analysts who develop employment projections and related information for the Occupational Outlook Handbook (OOH) and other OOSEP publications.

**Table I-5. High-wage, high-growth occupations, by educational attainment cluster and earnings**  
(Numbers in thousands)

2004 national employment matrix code and title		Employment		Employment change, 2004-14		May 2004 median annual earnings	Most significant source of postsecondary education or training	Educational attainment cluster
		2004	2014	Number	Percent			
47-2051	Cement masons and concrete finishers	201	233	32	15.9	\$31,400	Moderate-term on-the-job training	HS
47-2181	Roofers	162	189	27	16.8	30,840	Moderate-term on-the-job training	HS
47-2044	Tile and marble setters	59	73	14	22.9	35,410	Long-term on-the-job training	HS
47-2071	Paving, surfacing, and tamping equipment operators	63	73	10	15.6	29,990	Moderate-term on-the-job training	HS
51-9122	Painters, transportation equipment	53	61	7	14.1	35,120	Long-term on-the-job training	HS
47-2171	Reinforcing iron and rebar workers <sup>2</sup>	34	38	5	14.1	35,160	Long-term on-the-job training	HS
47-2022	Stonemasons	22	25	3	13.0	34,980	Long-term on-the-job training	HS
27-2032	Choreographers	19	22	3	16.8	33,670	Work experience in a related occupation	HS
49-3092	Recreational vehicle service technicians	13	15	3	19.5	28,980	Long-term on-the-job training	HS
49-9042	Maintenance and repair workers, general	1,332	1,533	202	15.2	30,710	Moderate-term on-the-job training	HS/SC
47-2031	Carpenters	1,349	1,535	186	13.8	34,900	Long-term on-the-job training	HS/SC
49-3023	Automotive service technicians and mechanics	803	929	126	15.7	32,450	Postsecondary vocational award	HS/SC
29-2061	Licensed practical and licensed vocational nurses	726	850	124	17.1	33,970	Postsecondary vocational award	HS/SC
47-2152	Plumbers, pipefitters, and steamfitters	499	577	78	15.7	41,290	Long-term on-the-job training	HS/SC
33-2011	Fire fighters	282	351	69	24.3	38,330	Long-term on-the-job training	HS/SC
49-9021	Heating, air conditioning, and refrigeration mechanics and installers	270	321	51	19.0	36,260	Long-term on-the-job training	HS/SC
43-6012	Legal secretaries	272	319	47	17.4	36,720	Postsecondary vocational award	HS/SC
37-1011	First-line supervisors/managers of housekeeping and janitorial workers	236	281	45	19.0	29,510	Work experience in a related occupation	HS/SC
53-3021	Bus drivers, transit and intercity	190	231	41	21.7	29,730	Moderate-term on-the-job training	HS/SC
49-3031	Bus and truck mechanics and diesel engine specialists	270	309	39	14.4	35,780	Postsecondary vocational award	HS/SC
39-1021	First-line supervisors/managers of personal service workers	206	244	38	18.3	30,350	Work experience in a related occupation	HS/SC
43-3051	Payroll and timekeeping clerks	214	251	37	17.3	30,350	Moderate-term on-the-job training	HS/SC
53-1031	First-line supervisors/managers of transportation and material-moving machine and vehicle operators	228	262	35	15.3	44,810	Work experience in a related occupation	HS/SC
37-1012	First-line supervisors/managers of landscaping, lawn service, and groundskeeping workers	184	217	33	17.8	35,340	Work experience in a related occupation	HS/SC
47-4051	Highway maintenance workers	143	177	33	23.3	29,550	Moderate-term on-the-job training	HS/SC
29-2055	Surgical technologists	84	109	25	29.5	34,010	Postsecondary vocational award	HS/SC
35-1011	Chefs and head cooks	125	146	21	16.7	30,680	Work experience in a related occupation	HS/SC
49-3011	Aircraft mechanics and service technicians	119	135	16	13.4	45,290	Postsecondary vocational award	HS/SC
51-8031	Water and liquid waste treatment plant and system operators	94	110	15	16.2	34,960	Long-term on-the-job training	HS/SC
43-5031	Police, fire, and ambulance dispatchers	95	111	15	15.9	28,930	Moderate-term on-the-job training	HS/SC
17-3022	Civil engineering technicians	94	107	13	14.1	38,480	Associate degree	HS/SC
47-4041	Hazardous materials removal workers	38	50	12	31.2	33,320	Moderate-term on-the-job training	HS/SC
47-2221	Structural iron and steel workers	73	83	11	15.0	42,430	Long-term on-the-job training	HS/SC
49-2098	Security and fire alarm systems installers	47	57	10	21.7	33,410	Postsecondary vocational award	HS/SC
53-4031	Railroad conductors and yardmasters	38	45	8	20.3	46,340	Moderate-term on-the-job training	HS/SC
47-2121	Glaziers	49	56	7	14.2	32,650	Long-term on-the-job training	HS/SC
53-6099	Transportation workers, all other	52	60	7	13.9	32,170	Short-term on-the-job training	HS/SC
17-3025	Environmental engineering technicians	20	25	5	24.4	38,550	Associate degree	HS/SC
49-9094	Locksmiths and safe repairers	28	33	5	16.1	30,360	Moderate-term on-the-job training	HS/SC
49-9062	Medical equipment repairers	29	34	4	14.8	37,220	Associate degree	HS/SC
47-4071	Septic tank servicers and sewer pipe cleaners <sup>2</sup>	20	24	4	21.8	28,870	Moderate-term on-the-job training	HS/SC
47-4021	Elevator installers and repairers	22	25	3	14.8	58,710	Long-term on-the-job training	HS/SC
49-3051	Motorboat mechanics	23	26	3	15.1	30,660	Long-term on-the-job training	HS/SC
49-9096	Riggers <sup>3</sup>	13	14	2	13.9	35,330	Short-term on-the-job training	HS/SC
33-3011	Bailiffs	18	20	2	13.2	33,870	Moderate-term on-the-job training	HS/SC
49-9011	Mechanical door repairers	11	12	2	15.8	32,000	Moderate-term on-the-job training	HS/SC
11-9071	Gaming managers <sup>1</sup>	4	5	1	22.6	58,580	Work experience in a related occupation	HS/SC
53-4041	Subway and streetcar operators <sup>2</sup>	9	10	1	13.7	49,290	Moderate-term on-the-job training	HS/SC
39-4011	Embalmers <sup>2</sup>	9	10	1	15.7	35,540	Postsecondary vocational award	HS/SC

See footnotes at end of table.

**Table I-5. High-wage, high-growth occupations, by educational attainment cluster and earnings — Continued**  
(Numbers in thousands)

2004 national employment matrix code and title		Employment		Employment change, 2004–14		May 2004 median annual earnings	Most significant source of postsecondary education or training	Educational attainment cluster
		2004	2014	Number	Percent			
53-1011	Aircraft cargo handling supervisors	8	9	1	17.4	34,100	Work experience in a related occupation	HS/SC
53-6041	Traffic technicians	6	7	1	14.1	33,670	Short-term on-the-job training	HS/SC
31-2011	Occupational therapist assistants <sup>2</sup>	21	29	7	34.1	38,430	Associate degree	SC
11-1021	General and operations managers	1,807	2,115	308	17.0	77,420	Bachelor's plus experience	HS/SC/C
41-3099	Sales representatives, services, all other	380	452	71	18.7	47,000	Moderate-term on-the-job training	HS/SC/C
41-4011	Sales representatives, wholesale and manufacturing, technical and scientific products	397	454	57	14.4	58,580	Moderate-term on-the-job training	HS/SC/C
11-9141	Property, real estate, and community association managers	361	416	55	15.3	39,980	Bachelor's degree	HS/SC/C
41-9022	Real estate sales agents	348	400	51	14.7	35,670	Postsecondary vocational award	HS/SC/C
41-9099	Sales and related workers, all other	226	267	42	18.4	31,380	Moderate-term on-the-job training	HS/SC/C
13-1031	Claims adjusters, examiners, and investigators	250	288	38	15.1	44,220	Long-term on-the-job training	HS/SC/C
25-2012	Kindergarten teachers, except special education	171	209	38	22.4	41,400	Bachelor's degree	HS/SC/C
13-1051	Cost estimators	198	234	36	18.2	49,940	Work experience in a related occupation	HS/SC/C
43-4161	Human resources assistants, except payroll and timekeeping	172	200	29	16.7	31,750	Short-term on-the-job training	HS/SC/C
27-2042	Musicians and singers	189	216	26	14.0	37,130	Long-term on-the-job training	HS/SC/C
47-4011	Construction and building inspectors	94	115	21	22.3	43,670	Work experience in a related occupation	HS/SC/C
29-2099	Healthcare technologists and technicians, all other	85	104	19	22.9	34,230	Postsecondary vocational award	HS/SC/C
13-2099	Financial specialists, all other	127	145	18	14.4	49,540	Bachelor's degree	HS/SC/C
39-6031	Flight attendants	102	119	17	16.3	43,440	Long-term on-the-job training	HS/SC/C
19-4099	Life, physical, and social science technicians, all other	83	100	17	20.0	37,840	Associate degree	HS/SC/C
27-2099	Entertainers and performers, sports and related workers, all other	76	92	16	21.0	34,800	Long-term on-the-job training	HS/SC/C
19-4021	Biological technicians	64	75	11	17.2	33,210	Associate degree	HS/SC/C
11-9081	Lodging managers	58	68	10	16.6	37,660	Work experience in a related occupation	HS/SC/C
29-1031	Dietitians and nutritionists	50	59	9	18.3	43,630	Bachelor's Degree	HS/SC/C
27-4011	Audio and video equipment technicians	46	55	8	18.1	32,570	Long-term on-the-job training	HS/SC/C
43-9031	Desktop publishers <sup>2</sup>	34	41	8	23.2	32,340	Postsecondary vocational award	HS/SC/C
39-1011	Gaming supervisors	38	44	6	16.3	40,840	Work experience in a related occupation	HS/SC/C
19-4091	Environmental science and protection technicians, including health	31	36	5	16.3	35,340	Associate degree	HS/SC/C
19-4092	Forensic science technicians	10	13	4	36.4	44,010	Associate degree	HS/SC/C
23-2091	Court reporters	18	21	3	14.8	42,920	Postsecondary vocational award	HS/SC/C
27-4099	Media and communication equipment workers, all other <sup>4</sup>	19	23	3	17.0	41,120	Moderate-term on-the-job training	HS/SC/C
19-4061	Social science research assistants	18	21	3	17.4	34,360	Associate degree	HS/SC/C
19-4011	Agricultural and food science technicians	23	26	3	13.4	29,730	Associate degree	HS/SC/C
13-1032	Insurance appraisers, auto damage	13	15	2	16.6	45,330	Long-term on-the-job training	HS/SC/C
27-4014	Sound engineering technicians	13	16	2	18.4	38,110	Postsecondary vocational award	HS/SC/C
19-4051	Nuclear technicians <sup>4</sup>	7	8	1	13.7	59,200	Associate degree	HS/SC/C
29-2091	Orthotists and prosthetists	6	7	1	18.0	50,260	Bachelor's degree	HS/SC/C
29-1111	Registered nurses	2,394	3,096	703	29.4	52,330	Associate degree	SC/C
13-1199	Business operation specialists, all other	897	1,139	242	27.0	53,460	Bachelor's degree	SC/C
15-1051	Computer systems analysts	487	640	153	31.4	66,460	Bachelor's degree	SC/C
15-1081	Network systems and data communications analysts	231	357	126	54.6	60,600	Bachelor's degree	SC/C
15-1041	Computer support specialists	518	638	119	23.0	40,430	Associate degree	SC/C
15-1071	Network and computer systems administrators	278	385	107	38.4	58,190	Bachelor's degree	SC/C
33-3051	Police and sheriff's patrol officers	639	738	99	15.5	45,210	Long-term on-the-job training	SC/C
11-3031	Financial managers	528	606	78	14.8	81,880	Bachelor's plus experience	SC/C
11-3021	Computer and information systems managers	280	353	73	25.9	92,570	Bachelor's plus experience	SC/C
29-2021	Dental hygienists	158	226	68	43.3	58,350	Associate degree	SC/C
23-2011	Paralegals and legal assistants	224	291	67	29.7	39,130	Associate degree	SC/C
11-1011	Chief executives	444	510	66	14.9	140,350	Bachelor's plus experience	SC/C
11-2022	Sales managers	337	403	66	19.7	84,220	Bachelor's plus experience	SC/C
25-3021	Self-enrichment education teachers	253	317	64	25.3	30,880	Work experience in a related occupation	SC/C
11-9111	Medical and health services managers	248	305	57	22.8	67,430	Bachelor's plus experience	SC/C

See footnotes at end of table.

**Table I-5. High-wage, high-growth occupations, by educational attainment cluster and earnings — Continued**  
(Numbers in thousands)

2004 national employment matrix code and title		Employment		Employment change, 2004–14		May 2004 median annual earnings	Most significant source of postsecondary education or training	Educational attainment cluster
		2004	2014	Number	Percent			
13-1071	Employment, recruitment, and placement specialists	182	237	55	30.5	41,190	Bachelor's degree	SC/C
11-3011	Administrative services managers	268	314	45	16.9	60,290	Bachelor's plus experience	SC/C
13-1073	Training and development specialists	216	261	45	20.8	44,570	Bachelor's degree	SC/C
29-2034	Radiologic technologists and technicians	182	224	42	23.2	43,350	Associate degree	SC/C
13-1079	Human resources, training, and labor relations specialists, all other	166	206	40	24.1	47,530	Bachelor's degree	SC/C
11-2021	Marketing managers	188	228	39	20.8	87,640	Bachelor's plus experience	SC/C
29-2012	Medical and clinical laboratory technicians	147	183	37	25.0	30,840	Associate degree	SC/C
27-1024	Graphic designers	228	263	35	15.2	38,030	Bachelor's degree	SC/C
29-2011	Medical and clinical laboratory technologists	156	188	32	20.5	45,730	Bachelor's degree	SC/C
29-1071	Physician assistants	62	93	31	49.6	69,410	Bachelor's degree	SC/C
21-1099	Community and social service specialists, all other	98	129	31	32.0	32,530	Bachelor's degree	SC/C
17-2112	Industrial engineers	177	205	28	16.0	65,020	Bachelor's degree	SC/C
15-1099	Computer specialists, all other	149	177	28	19.0	59,480	Associate degree	SC/C
29-1126	Respiratory therapists	94	120	27	28.4	43,140	Associate degree	SC/C
31-2021	Physical therapist assistants	59	85	26	44.2	37,890	Associate degree	SC/C
41-3011	Advertising sales agents	154	180	25	16.3	40,300	Moderate-term on-the-job training	SC/C
13-2021	Appraisers and assessors of real estate	102	125	23	22.8	43,390	Postsecondary vocational award	SC/C
31-9011	Massage therapists	97	120	23	23.6	31,960	Postsecondary vocational award	SC/C
13-1072	Compensation, benefits, and job analysis specialists	99	119	20	20.4	47,490	Bachelor's degree	SC/C
21-2021	Directors, religious activities and education	90	107	17	18.5	30,700	Bachelor's degree	SC/C
33-1012	First-line supervisors/managers of police and detectives	100	115	16	15.5	64,430	Work experience in a related occupation	SC/C
33-3021	Detectives and criminal investigators	91	106	15	16.4	53,990	Work experience in a related occupation	SC/C
29-2032	Diagnostic medical sonographers	42	57	15	34.8	52,490	Associate degree	SC/C
25-3011	Adult literacy, remedial education, and GED teachers and instructors	98	113	15	15.6	38,980	Bachelor's degree	SC/C
29-2031	Cardiovascular technologists and technicians	45	60	15	32.6	38,690	Associate degree	SC/C
27-2012	Producers and directors	83	97	14	16.6	52,840	Bachelor's plus experience	SC/C
27-1014	Multi-media artists and animators	94	107	13	14.1	50,360	Bachelor's degree	SC/C
11-3041	Compensation and benefits managers	57	70	12	21.5	66,530	Bachelor's plus experience	SC/C
33-1021	First-line supervisors/managers of fire fighting and prevention workers	56	68	12	21.1	58,920	Work experience in a related occupation	SC/C
27-3042	Technical writers	50	62	12	23.2	53,490	Bachelor's degree	SC/C
21-1091	Health educators	49	60	11	22.5	38,480	Master's degree	SC/C
11-3049	Human resources managers, all other	62	72	10	15.9	81,810	Bachelor's plus experience	SC/C
11-3042	Training and development managers	37	47	10	25.9	67,460	Bachelor's plus experience	SC/C
27-1025	Interior designers	65	75	10	15.5	40,670	Associate degree	SC/C
13-1121	Meeting and convention planners	43	52	10	22.2	39,620	Bachelor's degree	SC/C
13-2031	Budget analysts	58	65	8	13.5	56,040	Bachelor's degree	SC/C
33-9021	Private detectives and investigators	43	50	8	17.7	32,110	Work experience in a related occupation	SC/C
13-1081	Logisticians	53	60	7	13.2	57,110	Bachelor's degree	SC/C
15-1011	Computer and information scientists, research	22	28	6	25.6	85,190	Doctoral degree	SC/C
27-3099	Media and communication workers, all other	39	46	6	15.7	40,850	Long-term on-the-job training	SC/C
13-2071	Loan counselors	34	40	6	17.7	33,970	Bachelor's degree	SC/C
27-3091	Interpreters and translators	31	37	6	19.9	33,860	Long-term on-the-job training	SC/C
17-2111	Health and safety engineers, except mining safety engineers and inspectors	27	30	4	13.4	63,730	Bachelor's degree	SC/C
29-1124	Radiation therapists <sup>1</sup>	15	19	4	26.3	57,700	Associate Degree	SC/C
29-2033	Nuclear medicine technologists	18	22	4	21.5	56,450	Associate degree	SC/C
27-2021	Athletes and sports competitors	17	21	4	21.1	48,310	Long-term on-the-job training	SC/C
27-4032	Film and video editors	20	24	4	18.6	43,590	Bachelor's degree	SC/C
27-4031	Camera operators, television, video, and motion picture	28	32	4	14.2	37,610	Moderate-term on-the-job training	SC/C
53-2021	Air traffic controllers	24	28	3	14.3	102,030	Long-term on-the-job training	SC/C
17-2031	Biomedical engineers <sup>2</sup>	10	13	3	30.7	67,690	Bachelor's degree	SC/C
17-3019	Drafters, all other	24	27	3	14.0	41,860	Postsecondary vocational award	SC/C
19-1013	Soil and plant Scientists	17	19	2	13.9	51,200	Bachelor's degree	SC/C

See footnotes at end of table.

**Table I-5. High-wage, high-growth occupations, by educational attainment cluster and earnings — Continued**  
(Numbers in thousands)

2004 national employment matrix code and title		Employment		Employment change, 2004–14		May 2004 median annual earnings	Most significant source of postsecondary education or training	Educational attainment cluster
		2004	2014	Number	Percent			
13-1061	Emergency management specialists	10	13	2	22.8	45,390	Work experience in a related occupation	SC/C
27-1029	Designers, all other	16	18	2	13.6	42,250	Bachelor's degree	SC/C
53-2022	Airfield operations specialists	5	6	1	15.0	36,680	Long-term on-the-job training	SC/C
25-1000	Postsecondary teachers	1,628	2,153	524	32.2	51,800	Doctoral degree	C
25-2021	Elementary school teachers, except special education	1,457	1,722	265	18.2	43,160	Bachelor's degree	C
13-2011	Accountants and auditors	1,176	1,440	264	22.4	50,770	Bachelor's degree	C
15-1031	Computer software engineers, applications	460	682	222	48.4	74,980	Bachelor's degree	C
25-2031	Secondary school teachers, except special and vocational education	1,024	1,172	148	14.4	45,650	Bachelor's degree	C
15-1032	Computer software engineers, systems software	340	486	146	43.0	79,740	Bachelor's degree	C
29-1060	Physicians and surgeons	567	702	136	24.0	145,600	First professional degree	C
13-1111	Management analysts	605	727	122	20.1	63,450	Bachelor's plus experience	C
23-1011	Lawyers	735	845	110	15.0	94,930	First professional degree	C
25-2022	Middle school teachers, except special and vocational education	628	714	86	13.7	43,670	Bachelor's degree	C
29-1051	Pharmacists	230	287	57	24.6	84,900	First professional degree	C
29-1123	Physical therapists	155	211	57	36.7	60,180	Master's degree	C
21-1021	Child, family, and school social workers	272	324	52	19.0	34,820	Bachelor's degree	C
25-2041	Special education teachers, preschool, kindergarten, and elementary school	205	253	48	23.3	43,570	Bachelor's degree	C
27-3031	Public relations specialists	188	231	43	22.9	43,830	Bachelor's degree	C
13-2052	Personal financial advisors	158	199	41	25.9	62,700	Bachelor's degree	C
15-1061	Database administrators	104	144	40	38.2	60,650	Bachelor's degree	C
17-2051	Civil engineers	237	276	39	16.5	64,230	Bachelor's degree	C
19-3021	Market research analysts	190	227	37	19.6	56,140	Bachelor's degree	C
21-1012	Educational, vocational, and school counselors	248	285	37	14.8	45,570	Master's degree	C
13-2051	Financial analysts	197	231	34	17.3	61,910	Bachelor's degree	C
11-9151	Social and community service managers	134	169	34	25.5	46,810	Bachelor's degree	C
19-3031	Clinical, counseling, and school psychologists	167	199	32	19.1	54,950	Doctoral degree	C
25-9031	Instructional coordinators	117	149	32	27.5	48,790	Master's degree	C
29-1122	Occupational therapists	92	123	31	33.6	54,660	Master's degree	C
21-1023	Mental health and substance abuse social workers	116	147	31	26.7	33,920	Master's degree	C
21-1022	Medical and public health social workers	110	139	29	25.9	40,080	Bachelor's degree	C
11-9033	Education administrators, postsecondary	132	160	28	21.3	68,340	Bachelor's plus experience	C
17-2199	Engineers, all other	172	198	27	15.4	74,430	Bachelor's degree	C
21-1014	Mental health counselors	96	122	26	27.2	32,960	Master's degree	C
11-9041	Engineering managers	190	215	25	13.0	97,630	Bachelor's plus experience	C
19-1042	Medical scientists, except epidemiologists	72	97	25	34.1	61,320	Doctoral degree	C
25-2043	Special education teachers, secondary school	138	163	25	17.9	45,700	Bachelor's degree	C
27-3043	Writers and authors	142	167	25	17.7	44,350	Bachelor's degree	C
17-1011	Architects, except landscape and naval	129	151	22	17.3	60,300	Bachelor's degree	C
21-1011	Substance abuse and behavioral disorder counselors	76	98	22	28.7	32,130	Master's degree	C
25-2042	Special education teachers, middle school	98	118	19	19.9	44,160	Bachelor's degree	C
27-3041	Editors	127	146	19	14.8	43,890	Bachelor's degree	C
29-1021	Dentists, general	128	145	17	13.5	123,060	First professional degree	C
29-1199	Health diagnosing and treating practitioners, all other	72	88	16	22.5	57,970	Bachelor's degree	C
11-9031	Education administrators, preschool and child care center/program	58	75	16	27.9	35,730	Bachelor's plus experience	C
25-9099	Education, training, and library workers, all other	77	92	16	20.5	29,720	Bachelor's degree	C
17-2081	Environmental engineers	49	64	15	30.0	66,480	Bachelor's degree	C
53-2011	Airline pilots, copilots, and flight engineers	84	98	14	17.2	129,250	Bachelor's degree	C

See footnotes at end of table.

**Table I-5. High-wage, high-growth occupations, by educational attainment cluster and earnings — Continued**  
(Numbers in thousands)

2004 national employment matrix code and title		Employment		Employment change, 2004–14		May 2004 median annual earnings	Most significant source of postsecondary education or training	Educa-tional at-tainment cluster
		2004	2014	Number	Percent			
29-1127	Speech-language pathologists	96	110	14	14.6	52,410	Master's degree	C
11-2011	Advertising and promotions managers	64	77	13	20.3	63,610	Bachelor's plus experience	C
19-2041	Environmental scientists and specialists, including health	73	86	13	17.1	51,080	Master's degree	C
29-9099	Healthcare practitioners and technical workers, all other	55	68	13	23.8	33,360	Postsecondary vocational award	C
11-2031	Public relations managers	58	70	12	21.7	70,000	Bachelor's plus experience	C
29-1011	Chiropractors	53	64	12	22.4	69,910	First professional degree	C
21-1029	Social workers, all other	64	76	12	19.6	39,440	Bachelor's degree	C
29-1131	Veterinarians	61	71	11	17.4	66,590	First professional degree	C
41-9031	Sales engineers	74	84	10	14.0	70,620	Bachelor's degree	C
17-1022	Surveyors	56	65	9	15.9	42,980	Bachelor's degree	C
29-1041	Optometrists	34	40	7	19.7	88,410	First professional degree	C
11-9121	Natural sciences managers <sup>1</sup>	42	48	6	13.6	88,660	Bachelor's plus experience	C
21-1013	Marriage and family therapists	24	30	6	25.4	38,980	Master's degree	C
21-1019	Counselors, all other	25	31	6	23.1	34,990	Master's degree	C
11-9039	Education administrators, all other	26	31	5	20.3	60,250	Bachelor's plus experience	C
19-1029	Biological scientists, all other	29	34	5	17.0	56,270	Bachelor's degree	C
19-3051	Urban and regional planners	32	37	5	15.2	53,450	Master's degree	C
17-1012	Landscape architects	25	30	5	19.4	53,120	Bachelor's degree	C
19-2099	Physical scientists, all other	29	33	4	14.6	80,150	Bachelor's degree	C
15-2011	Actuaries	18	22	4	23.2	76,340	Bachelor's plus experience	C
53-2012	Commercial pilots	22	26	4	16.8	53,870	Postsecondary vocational award	C
29-1129	Therapists, all other	24	28	4	15.0	40,180	Bachelor's degree	C
29-9091	Athletic trainers	15	19	4	29.3	33,940	Bachelor's degree	C
19-1021	Biochemists and biophysicists	16	20	3	21.0	68,950	Doctoral degree	C
19-2043	Hydrologists	8	11	3	31.6	61,510	Master's degree	C
19-1099	Life scientists, all other	15	19	3	20.6	55,430	Bachelor's degree	C
19-1022	Microbiologists	15	18	3	17.2	54,840	Doctoral degree	C
29-1081	Podiatrists <sup>2</sup>	10	12	2	16.2	94,400	First professional degree	C
19-1023	Zoologists and wildlife biologists	16	19	2	13.0	50,330	Bachelor's degree	C
17-1021	Cartographers and photogrammetrists	11	12	2	15.2	46,080	Bachelor's degree	C
25-4012	Curators	10	12	2	15.7	43,620	Master's degree	C
29-9012	Occupational health and safety technicians	12	14	2	17.1	42,130	Postsecondary vocational award	C
25-9011	Audio-visual collections specialists	9	11	2	18.6	32,990	Moderate-term on-the-job training	C
29-1022	Oral and maxillofacial surgeons	6	7	1	16.2	145,600	First professional degree	C
19-2021	Atmospheric and space scientists <sup>1</sup>	7	9	1	16.5	70,100	Bachelor's degree	C
19-1041	Epidemiologists	5	6	1	26.2	54,800	Master's degree	C
23-1022	Arbitrators, mediators, and conciliators	5	6	1	15.5	54,760	Bachelor's plus experience	C
19-3091	Anthropologists and archeologists	5	6	1	17.0	43,890	Master's degree	C
25-4011	Archivists	6	7	1	13.4	36,470	Master's degree	C
25-4013	Museum Technicians and Conservators	10	12	1	14.1	31,820	Master's degree	C
29-1024	Prosthodontists	1	1	0	13.6	145,600	First professional degree	C
19-3032	Industrial-organizational psychologists	2	3	0	20.4	71,400	Master's degree	C

<sup>1</sup> Denotes that the source is CPS data for 25- to 44-year-olds over the 2000–04 period. CPS weighted employment exceeds 7,000.

<sup>2</sup> Denotes that the source for educational attainment information is CPS data for age 25-years-and-older age group over the 2000–04 period. CPS weighted employment exceeds 7,000.

<sup>3</sup> Denotes that the source is CPS data for age 16-years-and-older age

group over the 2002–04 period. CPS weighted employment exceeds 7,000.

<sup>4</sup> Denotes that the source is the data for the summary occupation at one level of detail higher. The source for the summary occupation is CPS data for 25- to 44-year-olds over the 2002–04 period. CPS weighted employment exceeds 10,000.

# Chapter II. Accounting for Offshoring in Occupational Employment Projections

Just as improvements in transportation allow more of the goods sold in the United States to be produced abroad, improvements in communications allow more of the services provided in the United States to be performed abroad. This movement of work abroad is called *offshoring*, and it affects the employment projections of some service-providing occupations.

Projections from the U.S. Bureau of Labor Statistics (BLS) account for offshoring in two main ways: first, BLS projections models are based on ongoing employment trends, which are affected by offshoring; second, BLS analysts consider offshoring when they develop their employment projections for individual occupations.

During the development of the 2002–12 projections, for example, many analysts factored offshoring into their projections of occupational employment, and some referred to it in their written explanations of job outlooks. To ensure that offshoring would be addressed uniformly across occupations during the 2004–14 projections process, BLS decided to apply a more systematic approach to the issue. A research team was formed to assess the offshoring phenomenon and to develop a method of accounting for offshoring in occupational employment projections. To achieve this goal, the team reviewed existing research, developed a system for identifying occupations most vulnerable to offshoring, analyzed and refined the system, and oversaw the implementation of the results.

The offshoring of manufacturing jobs has been going on since at least the early 1980s and is considered primarily an industry phenomenon. The industry analysis division believes that the movement of entire establishments out of the country is both well represented in BLS employment data and well accounted for by the forecasting techniques currently in use. The focus of the new offshoring analysis system was on service-providing occupations and the factors that put them at risk of being offshored—a topic about which considerably less is known and that is not well represented in the data.

## Reviewing the research

An initial analysis of outside sources found little hard data on offshoring; the main Federal surveys that address the issue include the Mass Layoff Statistics survey from BLS, the annual Survey of U.S. Direct Investment Abroad from the Bureau of Economic Analysis, and the Commerce Department's incorporation of offshoring questions into the periodic Institute for Supply Management Survey. However, none of these data sources address offshoring from an occupational standpoint.

A few private-sector research programs also were underway at the time BLS began a detailed study of the issue, but

these tended to focus on the impact of offshoring on specific industries rather than on the economy as a whole. Besides, much of the information was anecdotal and drawn from reports by a growing number of consulting firms that research the phenomenon of offshoring.

## The offshoring analysis system

Given this absence of comprehensive occupational data, the research team needed to develop a system for gathering information. The team decided to focus on identifying the occupations most prone to offshoring. The projections staff would use this list of occupations to focus their research and to decide how to address offshoring in BLS publications.

*Identifying susceptibilities.* On the basis of work carried out by the Commerce Department's Office of Technology Administration and the team's own sense of the critical issues, the team concluded that work in the occupations most likely to be offshored exhibits the following characteristics: it can be digitally transmitted, is Internet enabled, includes repetitive tasks, has clear requirements with few nuances, has little face-to-face interaction with end users or clients, is not particularly time sensitive, and is not multidisciplinary. In contrast, work least likely to be offshored has the following characteristics: it crosses many disciplines, requires considerable interaction, includes much uncertainty about specifications, involves nuances or a deep cultural understanding, and depends on creativity and innovation. In addition, the team thought that occupations with median wages within the middle two wage quartiles were more susceptible to offshoring than those in the top and bottom quartiles.

*Developing a questionnaire.* After identifying these characteristics, the next step was to design a method to determine how they related to specific occupations. To that end, the team created a series of questions to be asked about each occupation for which projections are developed. (See the questionnaire on page 15.)

Occupational analysts answered the questions yes or no, where an affirmative answer indicated a greater risk of offshoring. In all, eight questions were developed, with an affirmative answer scoring 1 and a negative answer scoring 0. Question 1 (“Can the occupation be successfully carried out without [the worker’s] being onsite or requiring a security clearance?”) was used as a necessary, but insufficient, condition: if the answer to this question was negative, the occupation was deemed not at risk for offshoring; if it was affirmative, the remaining questions were answered. The individual scores were summed, resulting in occupational scores ranging from 0 to 8. The scores served as general guidance when

occupations were evaluated further.

Analysts used the preceding exercise to factor offshoring into the 2004–14 projections. Of the 754 occupations for which projections were developed, 90 received an affirmative answer to the first question on the questionnaire.

*Further refinements.* A new team of occupational analysts was created to evaluate the effectiveness of the offshoring exercise, to refine its results, and to ensure that the *Handbook* addressed the offshoring issue consistently. Using information obtained from the initial offshoring exercise, along with additional information obtained through research, the team developed a list of occupations that it deemed susceptible to a significant risk of offshoring. Occupations were excluded if they required significant local or cultural knowledge, if technology or automation was judged to be affecting employment in the occupation, or if employment in the occupation appeared to rely heavily on government funding.

If local or cultural knowledge was found to be essential to the duties of an occupation, that occupation was not included in the list. Local and cultural knowledge can generally be obtained only by living in a certain locale; therefore, a job requiring such knowledge cannot be performed by someone who lives elsewhere. An example of such an occupation is market research analyst. Market research analysts were identified by the questionnaire as being susceptible to offshoring, but were not included in the list because workers in the occupation need specialized knowledge of the culture and tastes of the target market.

Likewise, if it was determined that technology or automation was dampening employment growth in an occupation substantially, that occupation was not included in the list, regardless of how it was characterized by the questionnaire. Word processors and typists, for example, were characterized by the questionnaire as being susceptible to offshoring; however, because many more of these jobs will be lost to computerization than to offshoring, the occupation was not included in the list.

Finally, if employment in an occupation appeared to rely heavily on government funding, it was excluded, because Federal, State, and local governments are less likely to offshore jobs than private companies are. For example, astronomers were identified by the questionnaire as being susceptible to offshoring, but because about 4 out of 5 astronomers work in government, they were not included in the list. In addition, occupations for which there was no anecdotal evidence of offshoring were not included in the list.

Further analysis raised doubts about the effectiveness of questions 3, 7, and 8 on the questionnaire. As a result, these questions were disregarded, and the scores were recalculated on the basis of the remaining questions, resulting in scores between 0 and 5. Question 3 was removed because most of the jobs that can be “routinized” will experience more job losses from automation than from offshoring. Question 7 was removed because analysts were found to be adequately taking these factors into account when answering question 1. Question 8 was removed because, after the exercise was created, it was determined that having a median wage within the middle

two quartiles of all occupations does not make an occupation more susceptible to offshoring. Initially, it was thought that offshoring jobs with median salaries in the first or fourth quartile would not benefit companies, both because payroll expenses for low-wage jobs in the United States would not differ greatly from payroll expenses for jobs in foreign countries and because high-wage jobs would be too important to offshore. However, this question was deemed irrelevant and was removed because no data about payroll expenses for jobs that have been offshored are available and because there is anecdotal evidence that high-wage jobs, such as computer software engineers, are currently being offshored.

## Results

Upon completion of the analysis, 40 detailed occupations were deemed susceptible to a significant risk of offshoring. These occupations are covered in 23 separate *Handbook* statements in the 2006–07 edition, with some statements covering more than one occupation. (See Table II–1.) All 23 statements were reviewed for consistency in describing the impact of offshoring on projected employment trends. Standardized language for describing that impact was developed and included in all 23 statements. Offshoring was not discussed in any other statements

*Limitations.* On the basis of both the results of this review and comments made by occupational analysts, the team believes that offshoring is adequately considered in the 2004–14 employment projections. However, any analysis of offshoring has inherent limitations, given the projections methodology. Many of the factors considered by occupational analysts in developing the projections are inherently subjective; hence, the quantitative impact of any one of these factors cannot be gauged. It is therefore not possible to isolate the impact of offshoring from that of other factors, such as reductions in industry employment and growth in worker productivity, which usually are interrelated and inseparable. For example, when the duties of an occupation become more routine, that occupation may face both greater automation and offshoring. Similarly, an occupation in a fast-growing industry tends to grow quickly even if it is experiencing offshoring. Such growth masks the effects of offshoring.

The method used to develop projections prevents analysts from isolating the influence of offshoring—or, for that matter, any other individual factor—on occupational employment growth. To develop occupational projections, the first step is to estimate projected-year industry employment levels, based on trends in output, hours, and worker productivity. Then, projected proportions—or ratios—of each occupation’s employment in key industries are estimated. All factors, including offshoring, that affect an occupation’s employment in an industry are incorporated into this ratio. After all projected ratios are reconciled to sum to 100 percent for each industry, projections of employment for each occupation in each industry are calculated. Employment is then aggregated across all industries to produce occupational employment projections.

The specific impact of offshoring on employment

National Employment Matrix code	Occupation title
13-1023	Purchasing agents, except wholesale, retail, and farm products
15-1011	Computer and information scientists, research
15-1021	Computer programmers
15-1031	Computer software engineers, applications
15-1032	Computer software engineers, systems software
15-1041	Computer support specialists
17-1011	Architects, except landscape and naval
17-2011	Aerospace engineers
17-2031	Biomedical engineers
17-2041	Chemical engineers
17-2061	Computer hardware engineers
17-2071	Electrical engineers
17-2072	Electronics engineers, except computer
17-2121	Marine engineers and naval architects
17-2131	Materials engineers
17-2141	Mechanical engineers
17-3011	Architectural and civil drafters
17-3012	Electrical and electronics drafters
17-3013	Mechanical drafters
17-3023	Electrical and electronic engineering technicians
17-3024	Electro-mechanical technicians
17-3027	Mechanical engineering technicians
19-1021	Biochemists and biophysicists
19-1022	Microbiologists
19-1042	Medical scientists, except epidemiologists
19-2031	Chemists
19-2032	Materials scientists
19-4021	Biological technicians
19-4031	Chemical technicians
27-1014	Multi-media artists and animators
27-1021	Commercial and industrial designers
27-1024	Graphic designers
31-9094	Medical transcriptionists
43-2011	Switchboard operators, including answering service
43-2021	Telephone operators
43-3011	Bill and account collectors
43-3031	Bookkeeping, accounting, and auditing clerks
43-4051	Customer service representatives
43-9021	Data entry keyers
49-3011	Aircraft mechanics and service technicians

growth cannot be determined simply by comparing projected job growth from the 2002–12 projections with that from the 2004–14 projections, for several reasons. Direct comparison is prevented by the incompatibility of different sets of employment projections that cover different periods and use different historical and base-year data. Comparison is further precluded because factors other than offshoring that affect employment trends may have changed substantially between 2002 and 2004. Furthermore, although offshoring was included as a potentially important factor for some occupations in previous sets of projections, it was not addressed consistently prior to the 2004–14 projections.

### Future steps

The questionnaire will be further reviewed and modified, after which analysts will use it to produce future sets of occupational employment projections that gauge the susceptibility of occupations to offshoring.

The 2006–16 projections cycle will be the first in which analysts will have a list of susceptible occupations before beginning their research. During the next cycle, analysts will focus particular attention on occupations with high scores that were nevertheless deemed not at significant risk of offshoring. These occupations may be added to the list if the factors affecting them change, making them more susceptible to offshoring.

Another review of external research devoted to offshoring also will be conducted. A sizable number of private entities have carried out research and published reports on this topic. Some focus on identifying the scale of offshoring, while others identify particular occupations and industries that are at risk.

The effort to address offshoring in the projections process is ongoing. Analysts continue to identify new risk factors and search for new evidence of offshoring in the occupations they study. The questionnaire and the analysis system will continually be revised and refined in an effort to give the public reliable, objective information about this trend.

## Scoring questions

Following are the original questions used to identify susceptibility to offshoring. Positive answers indicate higher risk.

**Question 1.** Can the occupation be successfully carried out without being onsite or requiring a security clearance?

Some jobs need to be carried out on-site. Doctors need to listen to your lungs, janitors need to be there to clean the floors, and chief executive officers surely need immediate contact, both physical and electronic, with their board of directors and top management staff.

**Question 2.** Are computers, telephones, or other telecommunications equipment used by the occupation extensively?

The more a particular job relies on telephone communications and computerized databases, the easier it will be to send to outsourcing locations.

**Question 3.** Can the work of the occupation be routinized or handled by following a script?

Individuals with jobs such as product support technician can work from well-designed scripts as long as their grasp of the language is good enough so as not to antagonize the individuals looking for assistance. Tax preparers work with provided data and a routine data-entry script to prepare income tax submissions, a job requiring a much less commanding grasp of English.

**Question 4.** Can the tasks of the occupation be carried out with little knowledge of social issues, industrial organization, or other local knowledge?

If the job does not require knowledge of the social patterns of the location where the service is ultimately supplied, then it will be much easier to send abroad. Social workers, for example, really need a grasp of the milieu their clients live and work in. Credit analysts don't need this same sensitivity to local issues.

**Question 5.** Are the products or services produced by the occupation and the inputs required to do the tasks telecommuni-

cable, Internet-capable, or easily and cheaply transportable? Being able to get the inputs and transport the outputs into easily transmitted bits and bytes makes carrying out a particular job at a distance far easier. Graphics artists doing their work in computerized drawing packages can turn around a picture request in a very short period of time from the other side of the world.

**Question 6.** Is the product or service produced by the occupation modular in nature?

Probably the prime example of this type of job is that of a computer programmer. Programming shops build up vast libraries of code modules. At a certain point the job of programmer becomes one of selecting the correct subset of modules and "wiring" them together with the appropriate linkages and front ends. The more modular a process is, the easier it will be to move it offshore at tremendous savings.

**Question 7.** Can the tasks of the occupation be carried out without any special license or other regulatory requirements?

These types of requirements, such as passing local bar exams, qualifying for a license to practice medicine in a given area, and many other professionally qualifying processes, make it very difficult to move the job far from the area where the service is actually provided.

**Question 8.** Does the median wage of the occupation fall within the middle two quartiles of wages for all occupations in the U.S.?

It will likely not be economical to move offshore the jobs of workers in the lowest quartile of wages since the savings realized will not be very great compared to the costs of such a movement. At the other end of the spectrum, positions in the top quartile of pay are highly skilled professional positions (or plumbers), which almost surely require that the incumbent remain close to the site of the job. This leaves the vast majority of positions in the middle two quartiles that will be those most likely to be successfully offshored.

# Chapter III. The 2004–14 National Employment Matrix Structure

The Bureau of Labor Statistics (BLS) develops occupational projections biennially as part of its Employment Projections program. BLS occupational projections use a set of three national employment matrices as tools for analyzing the utilization of occupations within industries and for projecting occupational employment: A 2004 base-year employment matrix, a change factor matrix, and a 2014 projected-year employment matrix. These three matrices are referred to collectively as the National Employment Matrix. Because they share the same configuration, an early step in each projection cycle is defining their occupation and industry employment structure. Occupations define matrix rows, while industries define matrix columns. Wage and salary industries account for the vast majority of columns. Separate columns encompass the other two classes of worker categories—the self-employed and unpaid family workers—which are treated as individual industries. Once defined, the three matrices use the same structure.

A major goal in defining the matrix structure is to provide the broadest possible measures of employment. The availability of data for constructing the 2004 base-year employment matrix generally is the limiting factor. Data on employment of the self-employed; unpaid family workers; and wage and salary workers, by industry, come from a variety of sources and fill the cells of the base-year matrix. Employment measures jobs, not individuals, because individuals may hold more than one job.

## 2004 base-year employment matrix

Calculating employment for each cell in the base-year matrix—currently the year 2004—establishes the initial employment levels for occupational projections.

For most industries, Occupational Employment Statistics (OES) survey data identify the occupational staffing pattern—the detailed occupations that constitute each wage and salary industry—and Current Employment Statistics (CES) data provide information on total wage and salary employment in each industry. Estimates of wage and salary industry employment for each occupation in each industry are derived by multiplying the proportion of wage and salary occupational employment in the industry, based on OES survey data, by base-year total wage and salary industry employment, based on CES data.

Other sources provide information on industries not included in the scope of the OES survey. The Current Population Survey (CPS) furnishes wage and salary employment data for agriculture; forestry, fishing, and hunting; support activities for agriculture and forestry; and private households. Fed-

eral Government and U.S. Postal Service (USPS) occupational wage and salary employment data come from the U.S. Office of Personnel Management (OPM) and the USPS, respectively.

Self-employed and unpaid family worker employment also come from the CPS. Information on second jobs is collected for one-quarter of the sample each month and is combined with primary-job occupational employment estimates to yield a broader employment measure of the self-employed and unpaid family workers. Employment figures for these two categories of workers are available only at the total, all-industries level.

Total base-year employment for an occupation is the sum of employment in a row across all columns—the combination of wage and salary, self-employed, and unpaid family workers. Occupational employment within each industry, divided by total wage and salary employment in each industry, yields the occupational distribution “ratios” used in preparing the change factor matrix and the projected-year employment matrix.

## Change-factor matrix

A second matrix, the change-factor matrix, uses the same structure as the base-year employment matrix to estimate changes in the utilization of wage and salary workers, by occupation, within industries. Systems analysts, for example, would be expected to become a greater proportion of each industry’s employment as the number of computer applications continues to increase. The change factor multiplied by the base-year wage and salary occupational distribution ratio determines the projected-year occupational distribution ratio. Occupational change factors are prepared only for wage and salary employment in detailed industries. (See Chapter V and table V–3.)

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<sup>1</sup> Prior to 2002, the Occupational Employment Statistics (OES) survey was an annual mail survey of approximately 400,000 establishments collected in the fourth quarter of each year. Over the course of a 3-year cycle, approximately 1.2 million establishments were sampled. Beginning in November 2002, the OES survey converted to a semiannual survey sampling approximately 200,000 establishments per panel. The reference periods were the second and the fourth quarters of each year. For the May 2004 OES survey estimates, data collected in May 2004 were combined with data collected in November 2003, May 2003, November 2002, 2001, and a subset of units sampled in 2000 to yield a sample of approximately 1.2 million establishments. Detailed information about the May 2004 OES survey is available at [http://www.bls.gov/oes/2004/may/oes\\_tec.htm](http://www.bls.gov/oes/2004/may/oes_tec.htm). CES wage and salary employment data come from a monthly sample that includes about 160,000 businesses and government agencies, which cover approximately 400,000 individual worksites. For more information, visit <http://www.bls.gov/ces/home.htm>.

## 2014 projected-year employment matrix

Preparing the projected-year employment matrix is the last step in the projections process. For each wage and salary industry, projected-year industry wage and salary employment, multiplied by the projected-year occupational distribution ratio, yields projected-year wage and salary occupational employment for the industry. Occupational employment for self-employed and unpaid family workers is projected separately with the use of time-series analytical techniques. Total projected-year occupational employment is the sum of employment in a row across all columns—the sum of the employment figures for wage and salary, self-employed, and unpaid family workers.

## Classification system changes

Since its inception, the National Employment Matrix has incorporated industry-by-occupation wage and salary employment information from two different data sources. Data from the Census Bureau's decennial Census of Population initially yielded industry-by-occupation employment patterns based on individuals' responses coded to that Agency's industry and occupation classification systems.

The OES survey-based industry-by-occupation employment data, first adopted for use with the 1980–90 projections, became the primary data source used in preparing the National Employment Matrix. OES survey data were preferred because the data were collected from establishments that were given occupational definitions for reporting employment and because the OES data were collected more frequently than the Census was conducted. The BLS National Employment Matrix used OES data based on a structure consistent with the 1980 Standard Occupational Classification (SOC) through its 1998–2008 set of occupational employment projections.

Occupational projections for 2000–10 incorporated the newly available 2000 SOC system for the first time. This revised classification system resulted in major changes to the occupational definitions and taxonomy used in the projections. These differences between the 2000 SOC-structured OES survey data and earlier 1980 SOC-system-based OES survey occupational data resulted in a break in the historical occupational employment time series. In this case, the differences resulted not from a change in a data source, but from the change in the classification system.

The OES survey's industry classification system—based first on the 1977 Standard Industrial Classification (SIC) system and later on the 1987 revision to the SIC system—underwent relatively few changes until the creation of the 2002 North American Industry Classification System (NAICS), which was first used with the 2002–12 employment projections, replacing the 1987 SIC.

The 2002–12 BLS National Employment Matrix used 2002 OES data coded to the 2000 SOC system and CES data coded to the 2002 NAICS, as does the 2004–14 employment matrix described in this chapter. CPS industry and occupational data used to construct the 2004–14 National Employment Matrix also are consistent with the 2000 SOC system and 2002 NAICS. The CPS began collecting 2000 SOC- and 2002

NAICS-based data in the January 2003 survey. CPS microdata for all surveys in 2000 through 2002 were recoded to a 2000 SOC and 2002 NAICS basis by the Census Bureau, which used the 2000 Census of Population occupation and industry classification system.

## The 2004-14 National Employment Matrix occupational directory

Improving consistency with the 2000 SOC system and establishing the broadest possible employment coverage were goals of the 2004–14 National Employment Matrix structure. Both goals were achieved, a task that required identifying and accounting for all valid 2000 SOC occupations and identifying data sources for industries that were out of the scope of the May 2004 OES survey. Table III–1 shows the occupation structure for the 2004 employment matrix.

Occupations define the rows in the matrix, and three types of occupations exist in the final structure of the matrix:

- Detailed or line-item occupations (754 in total) possess the greatest level of published occupation employment detail in the matrix and display 2004 and projected 2014 employment estimates.
- Summary occupations (268) combine employment information on detailed or line-item occupations and display 2004 and projected 2014 employment estimates.
- Excluded occupations (51) combine employment information on detailed occupations, the reliability of whose estimates is of concern. For example, in the 2004–14 National Employment Matrix occupational directory, the line item 53-4010, “locomotive engineers and operators,” combines OES staffing pattern data for 3 detailed rail transportation occupations: 53-4011, “locomotive engineers”; 53-4012, “locomotive firers”; and 53-4013, “railyard engineers, dinkey operators, and hostlers.” Base-year matrix employment and projected-year matrix employment for these 3 occupations were each summed in the corresponding line item occupation; separate projections were not released. (See table IV–2.)

**Adjusting May 2004 OES survey data.** Some alterations to the May 2004 OES survey data were needed to improve the coverage of information in the National Employment Matrix. For example, the OES survey generated May 2004 occupational employment estimates by applying industry employment data

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<sup>2</sup> Industry sector employment projections prepared in the Division of Industry Employment Projections use a comprehensive modeling technique that estimates output as well as employment. More detailed industry employment projections produced using historical time series information are included in the matrix and are consistent with their parent industry sector (See Chapter V and table V–1).

<sup>3</sup> See “Chapter I. 2000–10 Occupational Projections Incorporate the 2000 Standard Occupational Classification System,” Occupational Projections and Training Data, Bulletin 2542 (Bureau of Labor Statistics, January 2002).

<sup>4</sup> See “Chapter II. 2002–12 National Employment Matrix Structure,” Occupational Projections and Training Data, Bulletin 2572 (Bureau of Labor Statistics, March 2004).

from the Quarterly Census of Employment and Wages (QCEW) program to OES survey occupation patterns in each industry. The QCEW (also known as the ES-202) program represents the employment of workers covered by unemployment insurance programs in the United States and its territories. QCEW employment for NAICS industry 8131, “religious organizations,” however, does not reflect all workers, because unemployment insurance coverage for this industry is incomplete.

In preparing occupation projections, the matrix staff applies industry employment from the Current Employment Statistics (CES) program to most industries, including religious organizations. The CES employment figure for religious organizations is almost 10 times that from the QCEW; consequently, there is concern that some occupations in this industry may not be adequately represented by the OES survey. In particular, occupation 21-2011, “clergy,” the most significant occupation in religious organizations, would be considerably undercounted by using QCEW employment to select the OES sampling frame. Employment for clergy in the 2004 CPS industry-occupation matrix was significantly higher than the QCEW-based OES estimate. Accordingly, the occupational distribution for religious organizations was altered by increasing employment estimates for clergy and decreasing the ratios for every other occupation within the industry, before applying the distribution to 2004 CES employment.

*Recoding of Federal Government occupational data.* The U.S. Office of Personnel Management (OPM) and U.S. Postal Service (USPS) payroll data on Federal occupational employment provided to OES staff use occupational codes and titles unique to the Federal Government. On the basis of information provided by OPM and the USPS, Federal occupational data are recoded to the appropriate SOC occupations and are used to develop OES staffing patterns. In the case of information technology occupations, the OES survey assigns OPM data on computer specialists to 3 SOC occupations in matrix industry 919999, “Federal Government, excluding Postal Service.” After reviewing the situation, the matrix staff developed a methodology for redistributing the OES occupation data over all SOC-based computer specialist occupations. This methodology became part of the process of determining the matrix. The adjustment by matrix staff modified occupational employment patterns within matrix industry 919999, increasing the number of information technology occupations from 3 to 10, as follows:

*OES-coded Federal Government information technology occupations in matrix industry 919999*

- 15-1011 Computer and information scientist, research
- 15-1051 Computer systems analysts
- 15-1099 All other computer specialists

*Matrix-coded Federal Government information technology occupations in matrix industry 919999*

- 15-1011 Computer and information scientist, research
- 15-1021 Computer programmers

- 15-1031 Computer software engineers, applications
- 15-1032 Computer software engineers, systems software
- 15-1041 Computer support specialists
- 15-1051 Computer systems analysts
- 15-1061 Database administrators
- 15-1071 Network and computer systems administrators
- 15-1081 Network systems and data communications analyst
- 15-1099 All other computer specialists

**Distributing cps employment data for 2004 over soc occupations.** In addition to relying on the major contribution of May 2004 OES survey data consistent with the structure of the 2000 SOC system, the 2004–14 National Employment Matrix depends on 2004 CPS employment data for estimates of the numbers of self-employed and unpaid family workers, as well as wage and salary workers in a few industries. The 2004 CPS data were collected with the use of the 2000 Census of Population Occupation and Industry classification system, which closely resembles the 2000 SOC system. Of the 502 CPS occupations, 373 were exact matches to National Employment Matrix occupations. The remaining CPS occupations were distributed over two or more SOC occupations. When one CPS occupation had the same coverage as a combination of matrix occupations, a “crosswalk” was created to distribute CPS self-employed and unpaid family worker employment over the detailed matrix occupations on the basis of matrix wage and salary occupation employment.

**The 2004–14 National Employment Matrix industry directory**

Several goals shaped the design of the 2004 employment matrix’s industry structure:

1. Four- and five-digit NAICS industry detail would be provided whenever possible.

<i>Class-of-worker category</i>	<i>Number of columns</i>	<i>Data source</i>
<i>Total</i>		
<i>Self-employed workers, primary job</i>	1	CPS
<i>Self-employed workers, secondary job</i>	1	CPS
<i>Unpaid family workers, primary job</i>	1	CPS
<i>Unpaid family workers, secondary job</i>	1	CPS
<i>Wage and salary workers, primary job, agriculture, forestry, fishing, and private households</i>	6	CPS
<i>Wage and salary worker with secondary job, agriculture, forestry, fishing, and private households</i>	2	CPS
<i>Wage and salary workers, other industries</i>	324	OES

2. The structure of the matrix had to be consistent with the less detailed industry configuration used by the BLS Division of Industry Employment Projections (DIEP). More detailed matrix industry employment would have to add to DIEP industry employment controls.
3. The structure of the matrix would be consistent with that used by DIEP and the CES survey program in that private and government employment would be presented separately. Further, all detailed data released to the public would conform to the CES industry aggregation schema.

Data are available at the four-digit level for 239 of the 332 wage and salary matrix columns presented and at the five-digit level for another 76 wage and salary industries, and the structure is consistent with that of the DIEP and the CES survey program. (See table V-1, which presents DIEP industry sector employment projections and more detailed matrix industry projections.)

Class-of-worker categories—self-employed workers; unpaid family workers; and wage and salary workers, by industry—define the columns of the 2004 employment matrix. Detailed industry employment information is available only for wage and salary workers. As the following tabulation shows, the OES survey contributes occupational distribution information for wage and salary workers in 324 of the 336 matrix columns and is by far the largest source of occupational information:

Note that the class-of-worker structure of the 2004 matrix columns is consistent with that used with the 2002–12 projections. The 2004–14 National Employment Matrix provides data for 332 detailed wage and salary industries, however, compared with 278 detailed wage and salary industries presented in the previous set of projections. This increase in the number of detailed wage and salary industries was due to the availability of staffing pattern data from the OES survey for selected five-digit NAICS industries, discussed in greater detail next.

**Expanding the industry directory to include five-digit NAICS industry data collected by the OES survey.** In November 2002, the OES survey incorporated the 2002 NAICS structure for all four-digit and selected five-digit NAICS industries. The five-digit industries chosen had staffing patterns or historical growth rates that differed significantly from the those of the other five-digit component industries or from the overall four-digit industry. While planning for the 2004–14 employment projections, the Office of Occupational Statistics and Employment Projections analyzed alternatives and then decided to incorporate into the projections process May 2004 OES data on selected five-digit industries, in order to conduct its analysis at the greatest level of detail possible.

The inclusion of all available OES five-digit staffing pattern data resulted in a net gain of 46 detailed industries in the 2004–14 employment matrix, compared with the 2002–12 matrix. Valid five-digit NAICS codes were retained for all individual industries whenever possible. However, for clarity,

the matrix structure retained the non-NAICS “RR” designation to indicate combinations of 1 or more five-digit NAICS industries, resulting in 22 matrix industries with non-NAICS codes and titles that represent aggregations of data for 1 or more five-digit NAICS industries.

For example, the OES survey collected staffing pattern data for the five-digit NAICS industry 561420, “telephone call centers,” separately from the group of NAICS industries designated 5614RR, “All other business support services.” This “RR” group included the following industries:

*561410 Document preparation services*  
*561430 Business service centers*  
*561440 Collection agencies*  
*561450 Credit bureaus*  
*561490 Other business support services*

Matrix industry 5614RR was subsequently renamed with a non-NAICS title highlighting the largest sector included in the group: “collection agencies and all other business support services.” Industry employment in 561420, “telephone call centers,” was projected to decline by 2 percent, while industry employment in 5614RR, “collection agencies and all other business support services,” was projected to increase by 21 percent.

The following tabulation presents the matrix codes and titles of all new five-digit industries:

*237130 Power and communication line and related structures construction*  
*2371RR Water and sewer system and all other utility system construction*  
*238110 Poured concrete foundation and structure contractors*  
*238140 Masonry contractors*  
*238160 Roofing contractors*  
*2381RR Framing contractors and all other foundation, structure, and building exterior contractors*  
*238210 Electrical contractors*  
*238220 Plumbing, heating, and air-conditioning contractors*  
*238290 Other building equipment contractors*  
*238310 Drywall and insulation contractors*  
*238320 Painting and wall covering contractors*  
*2383RR Finish carpentry contractors and all other building finishing contractors*  
*332710 Machine shops*  
*332720 Turned product and screw, nut, and bolt manufacturing*  
*337110 Wood kitchen cabinet and countertop manufacturing*  
*337120 Household and institutional furniture manufacturing*  
*339910 Jewelry and silverware manufacturing*  
*3399RR Signs, sporting and athletic goods, and all other miscellaneous manufacturing*

- 423820 *Farm and garden machinery and equipment merchant wholesalers*
- 4238RR *Industrial machinery and all other machinery, equipment, and supplies merchant wholesalers*
- 446110 *Pharmacies and drug stores*
- 4461RR *Cosmetic, beauty supply, and all other health and personal care stores*
- 451110 *Sporting goods stores*
- 4511RR *Hobby, toy, sewing, and musical instrument stores*
- 511110 *Newspaper publishers*
- 5111RR *Periodical publishers and all other book and directory publishers*
- 512130 *Motion picture and video exhibition*
- 5121RR *Motion picture and video production, distribution, and all other related industries*
- 515110 *Radio broadcasting*
- 515120 *Television broadcasting*
- 522290 *Other nondepository credit intermediation, including real estate credit and consumer lending*
- 5222RR *Credit card issuing and sales financing*
- 524120 *Direct insurance (except life, health, and medical) carriers*
- 5241RR *Direct life, health, and medical insurance carriers and reinsurance carriers*
- 524210 *Insurance agencies and brokerages*
- 524290 *Other insurance related activities*
- 541312 *Architectural and landscape architectural services*
- 541337 *Engineering, surveying, mapping, building inspection, and drafting services*
- 541380 *Testing laboratories*
- 541710 *Research and development in the physical, engineering, and life sciences*
- 541720 *Research and development in the social sciences and humanities*
- 541920 *Photographic services*
- 541940 *Veterinary services*
- 5419RR *Marketing research, public opinion polling, and all other professional, scientific, and technical services*
- 561420 *Telephone call centers*
- 5614RR *Collection agencies and all other business support services*
- 561510 *Travel agencies*
- 5615RR *Tour operators and all other travel arrangement and reservation services*
- 561610 *Investigation, guard, and armored car services*
- 561620 *Security systems services*
- 561710 *Exterminating and pest control services*
- 561730 *Landscaping services*
- 5617RR *Janitorial and all other services to buildings and dwellings*
- 621310 *Offices of chiropractors*
- 621320 *Offices of optometrists*
- 621330 *Offices of mental health practitioners (except physicians)*
- 621340 *Offices of physical, occupational and speech therapists, and audiologists*
- 621390 *Offices of all other health practitioners*
- 621420 *Outpatient mental health and substance abuse centers*
- 6214RR *Outpatient care centers, except mental health and substance abuse*
- 621910 *Ambulance services*
- 621990 *All other ambulatory health care services*
- 623210 *Residential mental retardation facilities*
- 623220 *Residential mental health and substance abuse facilities*
- 624120 *Services for the elderly and persons with disabilities*
- 6241RR *Child, youth, and all other individual and family services*
- 713940 *Fitness and recreational sports centers*
- 7139RR *Golf courses, country clubs, and all other amusement and recreation industries*
- 721120 *Casino hotels*
- 7211RR *Hotels (except casino), motels, and all other traveler accommodation*
- 811110 *Automotive mechanical and electrical repair and maintenance*
- 811120 *Automotive body, paint, interior, and glass repair*
- 811190 *Other automotive repair and maintenance*
- 813930 *Labor unions and similar labor organizations*
- 8139RR *Business associations and all other professional and similar organizations*

**Industries not included in the scope of the OES survey.**

The May 2004 OES survey did not collect data on the following NAICS industries:

- 111000 *Crop production*
- 112000 *Animal production*
- 113100 *Timber tract operations*
- 113200 *Forest nurseries and gathering of forest products*
- 114000 *Fishing, hunting, and trapping*
- 115300 *Support activities for forestry*
- 814100 *Private households*

CPS information provided an alternative source of data for industries 111000, “crop production”; 112000, “animal production”; 114000, “fishing, hunting, and trapping”; and 814100, “private households,” and helped fill some other data gaps. CPS data, however, were not always available at the four-digit NAICS level.

NAICS industry 113300, “logging,” was included in the May 2004 OES survey. The broader industry, 113000, “forestry and logging,” was separated into non-NAICS industry 113132, “forestry,” and NAICS industry 113300, “logging.” Data for industry 113132 were obtained from the 2004 CPS. CPS data for NAICS industries 113100, “timber tract operations,” and 113200, “forest nurseries and gathering of forest products,” are not available separately.

The May 2004 OES survey included NAICS industries

115100, “support activities for crop production,” and 115200, “support activities for animal production,” but did not include coverage for industry 115300, “support activities for forestry.” Because these activities were out of the scope of the May 2004 OES survey, the CPS data for NAICS 115000, “support activities for agriculture and forestry,” were substituted.

The May 2004 OES survey collected combined data for NAICS 541310, “architectural services,” and 541320, “landscape architectural services,” necessitating the use of the non-NAICS matrix industry code and title 541312, “architectural and landscape architectural services,” for the combined data.

Private and government data for industries included under 611000, “educational services” (NAICS 611100–611700), and 622000, “hospitals” (NAICS 622100–622300), are not available separately from the OES survey. OES staff, however, provided an internal data file that separated May 2004 data on educational services and hospitals according to private, State government, and local government ownership. Occupational data for industries in 611000, “educational services,” and 622000, “hospitals,” appear separately for private, State, and local government ownership in the 2004–14 National Employment Matrix.

**Non-NAICS government codes.** Because they do not follow the 2002 NAICS structure, all industries within the government sector, except for industry 491100, “Postal Service,” have non-NAICS codes and titles, as follows:

919999 *Federal Government, excluding Postal Service*  
926110 *State government educational services*  
926220 *State government hospitals*  
929200 *State government, excluding  
education and hospitals*  
936110 *Local government educational services*  
936220 *Local government hospitals*  
939300 *Local government, excluding  
education and hospitals*

**Non-NAICS codes for industries not published separately in the CES survey.** Because of confidentiality concerns, CES industry employment control totals are not available separately for all matrix industries, so combined data are published. For example, matrix industry 721133, “traveler accommodation, including hotels and motels,” combines data for NAICS industries 721100, “traveler accommodation,” and 721300, “rooming and boarding houses.”

In the case of matrix industry 541337, “engineering, surveying, mapping, building inspection, and drafting services,” data for five separate industries are combined to achieve consistency with both OES and CES data restrictions, while also retaining the greatest level of detail possible. These five NAICS industries are as follows:

541330 *Engineering services*  
541340 *Drafting services*  
541350 *Building inspection services*  
541360 *Geophysical and mapping services*  
543170 *Surveying and mapping (except Geophysical)  
services*

Of the 502 industry rows in the 2004–14 National Employment Matrix, 336 are line items for which detailed projections are developed. The remaining 166 rows consist of various summary-level industries, 132 of which use valid NAICS codes and 17 of which use non-NAICS codes to describe the industries aggregated. No valid NAICS codes are available for summary-level industries employing government, self-employed, and unpaid family workers. Table III–2 provides matrix industry titles and NAICS coverage for each of the 502 industries in the 2004–14 National Employment Matrix industry directory.

**Table III-1. National Employment Matrix occupational directory, 2004**

Matrix code	Matrix occupation title	Occupation type	Matrix code	Matrix occupation title	Occupation type
00-0000*	Total, all occupations	Summary	13-1031	Claims adjusters, examiners, and investigators	Line item
11-1300*	Management, business, and financial occupations	Summary	13-1032	Insurance appraisers, auto damage	Line item
11-0000	Management occupations	Summary	13-1041	Compliance officers, except agriculture, construction, health and safety, and transportation	Line item
11-1000	Top executives	Summary	13-1051	Cost estimators	Line item
11-1011	Chief executives	Line item	13-1061	Emergency management specialists	Line item
11-1021	General and operations managers	Line item	13-1070	Human resources, training, and labor relations specialists	Summary
11-1031	Legislators	Line item	13-1071	Employment, recruitment, and placement specialists	Line item
11-2000	Advertising, marketing, promotions, public relations, and sales managers	Summary	13-1072	Compensation, benefits, and job analysis specialists	Line item
11-2011	Advertising and promotions managers	Line item	13-1073	Training and development specialists	Line item
11-2020	Marketing and sales managers	Summary	13-1079	Human resources, training, and labor relations specialists, all other	Line item
11-2021	Marketing managers	Line item	13-1081	Logisticians	Line item
11-2022	Sales managers	Line item	13-1111	Management analysts	Line item
11-2031	Public relations managers	Line item	13-1121	Meeting and convention planners	Line item
11-3000	Operations specialties managers	Summary	13-1199	Business operation specialists, all other	Line item
11-3011	Administrative services managers	Line item	13-2000	Financial specialists	Summary
11-3021	Computer and information systems managers	Line item	13-2011	Accountants and auditors	Line item
11-3031	Financial managers	Line item	13-2021	Appraisers and assessors of real estate	Line item
11-3040	Human resources managers	Summary	13-2031	Budget analysts	Line item
11-3041	Compensation and benefits managers	Line item	13-2041	Credit analysts	Line item
11-3042	Training and development managers	Line item	13-2050	Financial analysts and advisors	Summary
11-3049	Human resources managers, all other	Line item	13-2051	Financial analysts	Line item
11-3051	Industrial production managers	Line item	13-2052	Personal financial advisors	Line item
11-3061	Purchasing managers	Line item	13-2053	Insurance underwriters	Line item
11-3071	Transportation, storage, and distribution managers	Line item	13-2061	Financial examiners	Line item
11-9000	Other management occupations	Summary	13-2070	Loan counselors and officers	Summary
11-9010	Agricultural managers	Summary	13-2071	Loan counselors	Line item
11-9011	Farm, ranch, and other agricultural managers	Line item	13-2072	Loan officers	Line item
11-9012	Farmers and ranchers	Line item	13-2080	Tax examiners, collectors, preparers, and revenue agents	Summary
11-9021	Construction managers	Line item	13-2081	Tax examiners, collectors, and revenue agents	Line item
11-9030	Education administrators	Summary	13-2082	Tax preparers	Line item
11-9031	Education administrators, preschool and child care center/program	Line item	13-2099	Financial specialists, all other	Line item
11-9032	Education administrators, elementary and secondary school	Line item	15-2900*	Professional and related occupations	Summary
11-9033	Education administrators, postsecondary	Line item	15-0000	Computer and mathematical science occupations	Summary
11-9039	Education administrators, all other	Line item	15-1000	Computer specialists	Summary
11-9041	Engineering managers	Line item	15-1011	Computer and information scientists, research	Line item
11-9051	Food service managers	Line item	15-1021	Computer programmers	Line item
11-9061	Funeral directors	Line item	15-1030	Computer software engineers	Summary
11-9071	Gaming managers	Line item	15-1031	Computer software engineers, applications	Line item
11-9081	Lodging managers	Line item	15-1032	Computer software engineers, systems software	Line item
11-9111	Medical and health services managers	Line item	15-1041	Computer support specialists	Line item
11-9121	Natural sciences managers	Line item	15-1051	Computer systems analysts	Line item
11-9131	Postmasters and mail superintendents	Line item	15-1061	Database administrators	Line item
11-9141	Property, real estate, and community association managers	Line item	15-1071	Network and computer systems administrators	Line item
11-9151	Social and community service managers	Line item	15-1081	Network systems and data communications analysts	Line item
11-9199	Managers, all other	Line item	15-1099	Computer specialists, all other	Line item
13-0000	Business and financial operations occupations	Summary	15-2000	Mathematical science occupations	Summary
13-1000	Business operations specialists	Summary	15-2011	Actuaries	Line item
13-1011	Agents and business managers of artists, performers, and athletes	Line item	15-2021	Mathematicians	Line item
13-1020	Buyers and purchasing agents	Summary	15-2031	Operations research analysts	Line item
13-1021	Purchasing agents and buyers, farm products	Line item	15-2041	Statisticians	Line item
13-1022	Wholesale and retail buyers, except farm products	Line item	15-2090	Miscellaneous mathematical science occupations	Summary
13-1023	Purchasing agents, except wholesale, retail, and farm products	Line item			
13-1030	Claims adjusters, appraisers, examiners, and investigators	Summary			

**Table III–1. National Employment Matrix occupational directory, 2004 — Continued**

Matrix code	Matrix occupation title	Occupation type	Matrix code	Matrix occupation title	Occupation type
15-2091	Mathematical technicians	Line item	19-1029	Biological scientists, all other	Line item
15-2099	Mathematical scientists, all other	Line item	19-1030	Conservation scientists and foresters	Summary
17-0000	Architecture and engineering occupations	Summary	19-1031	Conservation scientists	Line item
17-1000	Architects, surveyors, and cartographers	Summary	19-1032	Foresters	Line item
17-1010	Architects, except naval	Summary	19-1040	Medical scientists	Summary
17-1011	Architects, except landscape and naval	Line item	19-1041	Epidemiologists	Line item
17-1012	Landscape architects	Line item	19-1042	Medical scientists, except epidemiologists	Line item
17-1020	Surveyors, cartographers, and photogrammetrists	Summary	19-1099	Life scientists, all other	Line item
17-1021	Cartographers and photogrammetrists	Line item	19-2000	Physical scientists	Summary
17-1022	Surveyors	Line item	19-2010	Astronomers and physicists	Summary
17-2000	Engineers	Summary	19-2011	Astronomers	Line item
17-2011	Aerospace engineers	Line item	19-2012	Physicists	Line item
17-2021	Agricultural engineers	Line item	19-2021	Atmospheric and space scientists	Line item
17-2031	Biomedical engineers	Line item	19-2030	Chemists and materials scientists	Summary
17-2041	Chemical engineers	Line item	19-2031	Chemists	Line item
17-2051	Civil engineers	Line item	19-2032	Materials scientists	Line item
17-2061	Computer hardware engineers	Line item	19-2040	Environmental scientists and geoscientists	Summary
17-2070	Electrical and electronics engineers	Summary	19-2041	Environmental scientists and specialists, including health	Line item
17-2071	Electrical engineers	Line item	19-2042	Geoscientists, except hydrologists and geographers	Line item
17-2072	Electronics engineers, except computer	Line item	19-2043	Hydrologists	Line item
17-2081	Environmental engineers	Line item	19-2099	Physical scientists, all other	Line item
17-2110	Industrial engineers, including health and safety	Summary	19-3000	Social scientists and related occupations	Summary
17-2111	Health and safety engineers, except mining safety engineers and inspectors	Line item	19-3011	Economists	Line item
17-2112	Industrial engineers	Line item	19-3020	Market and survey researchers	Summary
17-2121	Marine engineers and naval architects	Line item	19-3021	Market research analysts	Line item
17-2131	Materials engineers	Line item	19-3022	Survey researchers	Line item
17-2141	Mechanical engineers	Line item	19-3030	Psychologists	Summary
17-2151	Mining and geological engineers, including mining safety engineers	Line item	19-3031	Clinical, counseling, and school psychologists	Line item
17-2161	Nuclear engineers	Line item	19-3032	Industrial-organizational psychologists	Line item
17-2171	Petroleum engineers	Line item	19-3039	Psychologists, all other	Line item
17-2199	Engineers, all other	Line item	19-3041	Sociologists	Line item
17-3000	Drafters, engineering, and mapping technicians	Summary	19-3051	Urban and regional planners	Line item
17-3010	Drafters	Summary	19-3090	Miscellaneous social scientists and related workers	Summary
17-3011	Architectural and civil drafters	Line item	19-3091	Anthropologists and archeologists	Line item
17-3012	Electrical and electronics drafters	Line item	19-3092	Geographers	Line item
17-3013	Mechanical drafters	Line item	19-3093	Historians	Line item
17-3019	Drafters, all other	Line item	19-3094	Political scientists	Line item
17-3020	Engineering technicians, except drafters	Summary	19-3099	Social scientists and related workers, all other	Line item
17-3021	Aerospace engineering and operations technicians	Line item	19-4000	Life, physical, and social science technicians	Summary
17-3022	Civil engineering technicians	Line item	19-4011	Agricultural and food science technicians	Line item
17-3023	Electrical and electronic engineering technicians	Line item	19-4021	Biological technicians	Line item
17-3024	Electro-mechanical technicians	Line item	19-4031	Chemical technicians	Line item
17-3025	Environmental engineering technicians	Line item	19-4041	Geological and petroleum technicians	Line item
17-3026	Industrial engineering technicians	Line item	19-4051	Nuclear technicians	Line item
17-3027	Mechanical engineering technicians	Line item	19-4061	Social science research assistants	Line item
17-3029	Engineering technicians, except drafters, all other	Line item	19-4090	Other life, physical, and social science technicians	Summary
17-3031	Surveying and mapping technicians	Line item	19-4091	Environmental science and protection technicians, including health	Line item
19-0000	Life, physical, and social science occupations	Summary	19-4092	Forensic science technicians	Line item
19-1000	Life scientists	Summary	19-4093	Forest and conservation technicians	Line item
19-1010	Agricultural and food scientists	Summary	19-4099	Life, physical, and social science technicians, all other	Line item
19-1011	Animal scientists	Line item	21-0000	Community and social services occupations	Summary
19-1012	Food scientists and technologists	Line item	21-1000	Counselors, social workers, and other community and social service specialists	Summary
19-1013	Soil and plant Scientists	Line item	21-1010	Counselors	Summary
19-1020	Biological scientists	Summary	21-1011	Substance abuse and behavioral disorder counselors	Line item
19-1021	Biochemists and biophysicists	Line item			
19-1022	Microbiologists	Line item			
19-1023	Zoologists and wildlife biologists	Line item			

Table III-1. National Employment Matrix occupational directory, 2004 — Continued

Matrix code	Matrix occupation title	Occupation type	Matrix code	Matrix occupation title	Occupation type
21-1012	Educational, vocational, and school counselors	Line item	25-1066	Psychology teachers, postsecondary	Exclude
21-1013	Marriage and family therapists	Line item	25-1067	Sociology teachers, postsecondary	Exclude
21-1014	Mental health counselors	Line item	25-1069	Social sciences teachers, postsecondary, all other	Exclude
21-1015	Rehabilitation counselors	Line item	25-1071	Health specialties teachers, postsecondary	Exclude
21-1019	Counselors, all other	Line item	25-1072	Nursing instructors and teachers, postsecondary	Exclude
21-1020	Social workers	Summary	25-1081	Education teachers, postsecondary	Exclude
21-1021	Child, family, and school social workers	Line item	25-1082	Library science teachers, postsecondary	Exclude
21-1022	Medical and public health social workers	Line item	25-1111	Criminal justice and law enforcement teachers, postsecondary	Exclude
21-1023	Mental health and substance abuse social workers	Line item	25-1112	Law teachers, postsecondary	Exclude
21-1029	Social workers, all other	Line item	25-1113	Social work teachers, postsecondary	Exclude
21-1090	Miscellaneous community and social service specialists	Summary	25-1121	Art, drama, and music teachers, postsecondary	Exclude
21-1091	Health educators	Line item	25-1122	Communications teachers, postsecondary	Exclude
21-1092	Probation officers and correctional treatment specialists	Line item	25-1123	English language and literature teachers, postsecondary	Exclude
21-1093	Social and human service assistants	Line item	25-1124	Foreign language and literature teachers, postsecondary	Exclude
21-1099	Community and social service specialists, all other	Line item	25-1125	History teachers, postsecondary	Exclude
21-2000	Religious workers	Summary	25-1126	Philosophy and religion teachers, postsecondary	Exclude
21-2011	Clergy	Line item	25-1191	Graduate teaching assistants	Exclude
21-2021	Directors, religious activities and education	Line item	25-1192	Home economics teachers, postsecondary	Exclude
21-2099	Religious workers, all other	Line item	25-1193	Recreation and fitness studies teachers, postsecondary	Exclude
23-0000	Legal occupations	Summary	25-1194	Vocational education teachers, postsecondary	Exclude
23-1000	Lawyers, judges, and related workers	Summary	25-1199	Postsecondary teachers, all other	Exclude
23-1011	Lawyers	Line item	25-2000	Primary, secondary, and special education teachers	Summary
23-1020	Judges, magistrates, and other judicial workers	Summary	25-2010	Preschool and kindergarten teachers	Summary
23-1021	Administrative law judges, adjudicators, and hearing officers	Line item	25-2011	Preschool teachers, except special education	Line item
23-1022	Arbitrators, mediators, and conciliators	Line item	25-2012	Kindergarten teachers, except special education	Line item
23-1023	Judges, magistrate judges, and magistrates	Line item	25-2020	Elementary and middle school teachers	Summary
23-2000	Legal support workers	Summary	25-2021	Elementary school teachers, except special education	Line item
23-2011	Paralegals and legal assistants	Line item	25-2022	Middle school teachers, except special and vocational education	Line item
23-2090	Miscellaneous legal support workers	Summary	25-2023	Vocational education teachers, middle school	Line item
23-2091	Court reporters	Line item	25-2030	Secondary school teachers	Summary
23-2092	Law clerks	Line item	25-2031	Secondary school teachers, except special and vocational education	Line item
23-2093	Title examiners, abstractors, and searchers	Line item	25-2032	Vocational education teachers, secondary school	Line item
23-2099	Legal support workers, all other	Line item	25-2040	Special education teachers	Summary
25-0000	Education, training, and library occupations	Summary	25-2041	Special education teachers, preschool, kindergarten, and elementary school	Line item
25-1000	Postsecondary teachers	Line item	25-2042	Special education teachers, middle school	Line item
25-1011	Business teachers, postsecondary	Exclude	25-2043	Special education teachers, secondary school	Line item
25-1021	Computer science teachers, postsecondary	Exclude	25-3000	Other teachers and instructors	Summary
25-1022	Mathematical science teachers, postsecondary	Exclude	25-3011	Adult literacy, remedial education, and GED teachers and instructors	Line item
25-1031	Architecture teachers, postsecondary	Exclude	25-3021	Self-enrichment education teachers	Line item
25-1032	Engineering teachers, postsecondary	Exclude	25-3099	Teachers and instructors, all other	Line item
25-1041	Agricultural sciences teachers, postsecondary	Exclude	25-4000	Librarians, curators, and archivists	Summary
25-1042	Biological science teachers, postsecondary	Exclude	25-4010	Archivists, curators, and museum technicians	Summary
25-1043	Forestry and conservation science teachers, postsecondary	Exclude	25-4011	Archivists	Line item
25-1051	Atmospheric, earth, marine, and space sciences teachers, postsecondary	Exclude	25-4012	Curators	Line item
25-1052	Chemistry teachers, postsecondary	Exclude	25-4013	Museum Technicians and Conservators	Line item
25-1053	Environmental science teachers, postsecondary	Exclude	25-4021	Librarians	Line item
25-1054	Physics teachers, postsecondary	Exclude	25-4031	Library technicians	Line item
25-1061	Anthropology and archeology teachers, postsecondary	Exclude			
25-1062	Area, ethnic, and cultural studies teachers, postsecondary	Exclude			
25-1063	Economics teachers, postsecondary	Exclude			
25-1064	Geography teachers, postsecondary	Exclude			
25-1065	Political science teachers, postsecondary	Exclude			

Table III-1. National Employment Matrix occupational directory, 2004 — Continued

Matrix code	Matrix occupation title	Occupation type	Matrix code	Matrix occupation title	Occupation type
25-9000	Other education, training, and library occupations	Summary	27-4000	Media and communication equipment occupations	Summary
25-9011	Audio-visual collections specialists	Line item	27-4010	Broadcast and sound engineering technicians and radio operators	Summary
25-9021	Farm and home management advisors	Line item	27-4011	Audio and video equipment technicians	Line item
25-9031	Instructional coordinators	Line item	27-4012	Broadcast technicians	Line item
25-9041	Teacher assistants	Line item	27-4013	Radio operators	Line item
25-9099	Education, training, and library workers, all other	Line item	27-4014	Sound engineering technicians	Line item
27-0000	Arts, design, entertainment, sports, and media occupations	Summary	27-4021	Photographers	Line item
27-1000	Art and design occupations	Summary	27-4030	Television, video, and motion picture camera operators and editors	Summary
27-1010	Artists and related workers	Summary	27-4031	Camera operators, television, video, and motion picture	Line item
27-1011	Art directors	Line item	27-4032	Film and video editors	Line item
27-1012	Craft artists	Line item	27-4099	Media and communication equipment workers, all other	Line item
27-1013	Fine artists, including painters, sculptors, and illustrators	Line item	29-0000	Healthcare practitioners and technical occupations	Summary
27-1014	Multi-media artists and animators	Line item	29-1000	Health diagnosing and treating practitioners	Summary
27-1019	Artists and related workers, all other	Line item	29-1011	Chiropractors	Line item
27-1020	Designers	Summary	29-1012	Dentists	Summary
27-1021	Commercial and industrial designers	Line item	29-1021	Dentists, general	Line item
27-1022	Fashion designers	Line item	29-1022	Oral and maxillofacial surgeons	Line item
27-1023	Floral designers	Line item	29-1023	Orthodontists	Line item
27-1024	Graphic designers	Line item	29-1024	Prosthodontists	Line item
27-1025	Interior designers	Line item	29-1029	Dentists, all other specialists	Line item
27-1026	Merchandise displayers and window trimmers	Line item	29-1031	Dietitians and nutritionists	Line item
27-1027	Set and exhibit designers	Line item	29-1041	Optometrists	Line item
27-1029	Designers, all other	Line item	29-1051	Pharmacists	Line item
27-2000	Entertainers and performers, sports and related occupations	Summary	29-1060	Physicians and surgeons	Line item
27-2010	Actors, producers, and directors	Summary	29-1061	Anesthesiologists	Exclude
27-2011	Actors	Line item	29-1062	Family and general practitioners	Exclude
27-2012	Producers and directors	Line item	29-1063	Internists, general	Exclude
27-2020	Athletes, coaches, umpires, and related workers	Summary	29-1064	Obstetricians and gynecologists	Exclude
27-2021	Athletes and sports competitors	Line item	29-1065	Pediatricians, general	Exclude
27-2022	Coaches and scouts	Line item	29-1066	Psychiatrists	Exclude
27-2023	Umpires, referees, and other sports officials	Line item	29-1067	Surgeons	Exclude
27-2030	Dancers and choreographers	Summary	29-1069	Physicians and surgeons, all other	Exclude
27-2031	Dancers	Line item	29-1071	Physician assistants	Line item
27-2032	Choreographers	Line item	29-1081	Podiatrists	Line item
27-2040	Musicians, singers, and related workers	Summary	29-1111	Registered nurses	Line item
27-2041	Music directors and composers	Line item	29-1120	Therapists	Summary
27-2042	Musicians and singers	Line item	29-1121	Audiologists	Line item
27-2099	Entertainers and performers, sports and related workers, all other	Line item	29-1122	Occupational therapists	Line item
27-3000	Media and communication occupations	Summary	29-1123	Physical therapists	Line item
27-3010	Announcers	Summary	29-1124	Radiation therapists	Line item
27-3011	Radio and television announcers	Line item	29-1125	Recreational therapists	Line item
27-3012	Public address system and other announcers	Line item	29-1126	Respiratory therapists	Line item
27-3020	News analysts, reporters and correspondents	Summary	29-1127	Speech-language pathologists	Line item
27-3021	Broadcast news analysts	Line item	29-1129	Therapists, all other	Line item
27-3022	Reporters and correspondents	Line item	29-1131	Veterinarians	Line item
27-3031	Public relations specialists	Line item	29-1199	Health diagnosing and treating practitioners, all other	Line item
27-3040	Writers and editors	Summary	29-2000	Health technologists and technicians	Summary
27-3041	Editors	Line item	29-2010	Clinical laboratory technologists and technicians	Summary
27-3042	Technical writers	Line item	29-2011	Medical and clinical laboratory technologists	Line item
27-3043	Writers and authors	Line item	29-2012	Medical and clinical laboratory technicians	Line item
27-3090	Miscellaneous media and communications workers	Summary	29-2021	Dental hygienists	Line item
27-3091	Interpreters and translators	Line item	29-2030	Diagnostic related technologists and technicians	Summary
27-3099	Media and communication workers, all other	Line item	29-2031	Cardiovascular technologists and technicians	Line item
			29-2032	Diagnostic medical sonographers	Line item

Table III-1. National Employment Matrix occupational directory, 2004 — Continued

Matrix code	Matrix occupation title	Occupation type	Matrix code	Matrix occupation title	Occupation type
29-2033	Nuclear medicine technologists	Line item	33-1012	First-line supervisors/managers of police and detectives	Line item
29-2034	Radiologic technologists and technicians	Line item	33-1021	First-line supervisors/managers of fire fighting and prevention workers	Line item
29-2041	Emergency medical technicians and paramedics	Line item	33-1099	First-line supervisors/managers, protective service workers, all other	Line item
29-2050	Health diagnosing and treating practitioner support technicians	Summary	33-2000	Fire fighting and prevention workers	Summary
29-2051	Dietetic technicians	Line item	33-2011	Fire fighters	Line item
29-2052	Pharmacy technicians	Line item	33-2020	Fire inspectors	Summary
29-2053	Psychiatric technicians	Line item	33-2021	Fire inspectors and investigators	Line item
29-2054	Respiratory therapy technicians	Line item	33-2022	Forest fire inspectors and prevention specialists	Line item
29-2055	Surgical technologists	Line item	33-3000	Law enforcement workers	Summary
29-2056	Veterinary technologists and technicians	Line item	33-3010	Bailiffs, correctional officers, and jailers	Summary
29-2061	Licensed practical and licensed vocational nurses	Line item	33-3011	Bailiffs	Line item
29-2071	Medical records and health information technicians	Line item	33-3012	Correctional officers and jailers	Line item
29-2081	Opticians, dispensing	Line item	33-3021	Detectives and criminal investigators	Line item
29-2090	Miscellaneous health technologists and technicians	Summary	33-3031	Fish and game wardens	Line item
29-2091	Orthotists and prosthetists	Line item	33-3041	Parking enforcement workers	Line item
29-2099	Healthcare technologists and technicians, all other	Line item	33-3050	Police officers	Summary
29-9000	Other healthcare practitioners and technical occupations	Summary	33-3051	Police and sheriff's patrol officers	Line item
29-9010	Occupational health and safety specialists and technicians	Summary	33-3052	Transit and railroad police	Line item
29-9011	Occupational health and safety specialists	Line item	33-9000	Other protective service workers	Summary
29-9012	Occupational health and safety technicians	Line item	33-9011	Animal control workers	Line item
29-9090	Miscellaneous health practitioners and technical workers	Summary	33-9021	Private detectives and investigators	Line item
29-9091	Athletic trainers	Line item	33-9030	Security guards and gaming surveillance officers	Summary
29-9099	Healthcare practitioners and technical workers, all other	Line item	33-9031	Gaming surveillance officers and gaming investigators	Line item
31-3900*	Service occupations	Summary	33-9032	Security guards	Line item
31-0000	Healthcare support occupations	Summary	33-9090	Miscellaneous protective service workers	Summary
31-1000	Nursing, psychiatric, and home health aides	Summary	33-9091	Crossing guards	Line item
31-1011	Home health aides	Line item	33-9092	Lifeguards, ski patrol, and other recreational protective service workers	Line item
31-1012	Nursing aides, orderlies, and attendants	Line item	33-9099	Protective service workers, all other	Line item
31-1013	Psychiatric aides	Line item	35-0000	Food preparation and serving related occupations	Summary
31-2000	Occupational and physical therapist assistants and aides	Summary	35-1000	Supervisors, food preparation and serving workers	Summary
31-2010	Occupational therapist assistants and aides	Summary	35-1011	Chefs and head cooks	Line item
31-2011	Occupational therapist assistants	Line item	35-1012	First-line supervisors/managers of food preparation and serving workers	Line item
31-2012	Occupational therapist aides	Line item	35-2000	Cooks and food preparation workers	Summary
31-2020	Physical therapist assistants and aides	Summary	35-2010	Cooks	Summary
31-2021	Physical therapist assistants	Line item	35-2011	Cooks, fast food	Line item
31-2022	Physical therapist aides	Line item	35-2012	Cooks, institution and cafeteria	Line item
31-9000	Other healthcare support occupations	Summary	35-2013	Cooks, private household	Line item
31-9011	Massage therapists	Line item	35-2014	Cooks, restaurant	Line item
31-9090	Miscellaneous healthcare support occupations	Summary	35-2015	Cooks, short order	Line item
31-9091	Dental assistants	Line item	35-2019	Cooks, all other	Line item
31-9092	Medical assistants	Line item	35-2021	Food preparation workers	Line item
31-9093	Medical equipment preparers	Line item	35-3000	Food and beverage serving workers	Summary
31-9094	Medical transcriptionists	Line item	35-3011	Bartenders	Line item
31-9095	Pharmacy aides	Line item	35-3020	Fast food and counter workers	Summary
31-9096	Veterinary assistants and laboratory animal caretakers	Line item	35-3021	Combined food preparation and serving workers, including fast food	Line item
31-9099	Healthcare support workers, all other	Line item	35-3022	Counter attendants, cafeteria, food concession, and coffee shop	Line item
33-0000	Protective service occupations	Summary	35-3031	Waiters and waitresses	Line item
33-1000	First-line supervisors/managers, protective service workers	Summary	35-3041	Food servers, nonrestaurant	Line item
33-1010	First-line supervisors/managers, law enforcement workers	Summary	35-9000	Other food preparation and serving related workers	Summary
33-1011	First-line supervisors/managers of correctional officers	Line item	35-9011	Dining room and cafeteria attendants and bartender helpers	Line item
			35-9021	Dishwashers	Line item

**Table III-1. National Employment Matrix occupational directory, 2004 — Continued**

Matrix code	Matrix occupation title	Occupation type	Matrix code	Matrix occupation title	Occupation type
35-9031	Hosts and hostesses, restaurant, lounge, and coffee shop	Line item	39-5093	Shampooers	Line item
35-9099	Food preparation and serving related workers, all other	Line item	39-5094	Skin care specialists	Line item
37-0000	Building and grounds cleaning and maintenance occupations	Summary	39-6000	Transportation, tourism, and lodging attendants	Summary
37-1000	Supervisors, building and grounds cleaning and maintenance workers	Summary	39-6010	Baggage porters, bellhops, and concierges	Summary
37-1011	First-line supervisors/managers of housekeeping and janitorial workers	Line item	39-6011	Baggage porters and bellhops	Line item
37-1012	First-line supervisors/managers of landscaping, lawn service, and groundskeeping workers	Line item	39-6012	Concierges	Line item
37-2000	Building cleaning and pest control workers	Summary	39-6020	Tour and travel guides	Summary
37-2010	Building cleaning workers	Summary	39-6021	Tour guides and escorts	Line item
37-2011	Janitors and cleaners, except maids and housekeeping cleaners	Line item	39-6022	Travel guides	Line item
37-2012	Maids and housekeeping cleaners	Line item	39-6030	Transportation attendants	Summary
37-2019	Building cleaning workers, all other	Line item	39-6031	Flight attendants	Line item
37-2021	Pest control workers	Line item	39-6032	Transportation attendants, except flight attendants and baggage porters	Line item
37-3000	Grounds maintenance workers	Summary	39-9000	Other personal care and service workers	Summary
37-3010	Grounds maintenance workers	Summary	39-9011	Child care workers	Line item
37-3011	Landscaping and groundskeeping workers	Line item	39-9021	Personal and home care aides	Line item
37-3012	Pesticide handlers, sprayers, and applicators, vegetation	Line item	39-9030	Recreation and fitness workers	Summary
37-3013	Tree trimmers and pruners	Line item	39-9031	Fitness trainers and aerobics instructors	Line item
37-3019	Grounds maintenance workers, all other	Line item	39-9032	Recreation workers	Line item
39-0000	Personal care and service occupations	Summary	39-9041	Residential advisors	Line item
39-1000	Supervisors, personal care and service workers	Summary	39-9099	Personal care and service workers, all other	Line item
39-1010	First-line supervisors/managers of gaming workers	Summary	41-0000	Sales and related occupations	Summary
39-1011	Gaming supervisors	Line item	41-1000	Supervisors, sales workers	Summary
39-1012	Slot key persons	Line item	41-1011	First-line supervisors/managers of retail sales workers	Line item
39-1021	First-line supervisors/managers of personal service workers	Line item	41-1012	First-line supervisors/managers of non-retail sales workers	Line item
39-2000	Animal care and service workers	Summary	41-2000	Retail sales workers	Summary
39-2011	Animal trainers	Line item	41-2010	Cashiers	Summary
39-2021	Nonfarm animal caretakers	Line item	41-2011	Cashiers, except gaming	Line item
39-3000	Entertainment attendants and related workers	Summary	41-2012	Gaming change persons and booth cashiers	Line item
39-3010	Gaming services workers	Summary	41-2020	Counter and rental clerks and parts salespersons	Summary
39-3011	Gaming dealers	Line item	41-2021	Counter and rental clerks	Line item
39-3012	Gaming and sports book writers and runners	Line item	41-2022	Parts salespersons	Line item
39-3019	Gaming service workers, all other	Line item	41-2031	Retail salespersons	Line item
39-3021	Motion picture projectionists	Line item	41-3000	Sales representatives, services	Summary
39-3031	Ushers, lobby attendants, and ticket takers	Line item	41-3011	Advertising sales agents	Line item
39-3090	Miscellaneous entertainment attendants and related workers	Summary	41-3021	Insurance sales agents	Line item
39-3091	Amusement and recreation attendants	Line item	41-3031	Securities, commodities, and financial services sales agents	Line item
39-3092	Costume attendants	Line item	41-3041	Travel agents	Line item
39-3093	Locker room, coatroom, and dressing room attendants	Line item	41-3099	Sales representatives, services, all other	Line item
39-3099	Entertainment attendants and related workers, all other	Line item	41-4000	Sales representatives, wholesale and manufacturing	Summary
39-4000	Funeral service workers	Summary	41-4011	Sales representatives, wholesale and manufacturing, technical and scientific products	Line item
39-4011	Embalmers	Line item	41-4012	Sales representatives, wholesale and manufacturing, except technical and scientific products	Line item
39-4021	Funeral attendants	Line item	41-9000	Other sales and related workers	Summary
39-5000	Personal appearance workers	Summary	41-9010	Models, demonstrators, and product promoters	Summary
39-5010	Barbers and cosmetologists	Summary	41-9011	Demonstrators and product promoters	Line item
39-5011	Barbers	Line item	41-9012	Models	Line item
39-5012	Hairdressers, hairstylists, and cosmetologists	Line item	41-9020	Real estate brokers and sales agents	Summary
39-5090	Miscellaneous personal appearance workers	Summary	41-9021	Real estate brokers	Line item
39-5091	Makeup artists, theatrical and performance	Line item	41-9022	Real estate sales agents	Line item
39-5092	Manicurists and pedicurists	Line item	41-9031	Sales engineers	Line item
			41-9041	Telemarketers	Line item
			41-9090	Miscellaneous sales and related workers	Summary
			41-9091	Door-to-door sales workers, news and street vendors, and related workers	Line item
			41-9099	Sales and related workers, all other	Line item

Table III-1. National Employment Matrix occupational directory, 2004 — Continued

Matrix code	Matrix occupation title	Occupation type	Matrix code	Matrix occupation title	Occupation type
43-0000	Office and administrative support occupations	Summary	43-9000	Other office and administrative support workers	Summary
43-1000	Supervisors, office and administrative support workers	Summary	43-9011	Computer operators	Line item
43-1011	First-line supervisors/managers of office and administrative support workers	Line item	43-9020	Data entry and information processing workers	Summary
43-2000	Communications equipment operators	Summary	43-9021	Data entry keyers	Line item
43-2011	Switchboard operators, including answering service	Line item	43-9022	Word processors and typists	Line item
43-2021	Telephone operators	Line item	43-9031	Desktop publishers	Line item
43-2099	Communications equipment operators, all other	Line item	43-9041	Insurance claims and policy processing clerks	Line item
43-3000	Financial clerks	Summary	43-9051	Mail clerks and mail machine operators, except postal service	Line item
43-3011	Bill and account collectors	Line item	43-9061	Office clerks, general	Line item
43-3021	Billing and posting clerks and machine operators	Line item	43-9071	Office machine operators, except computer	Line item
43-3031	Bookkeeping, accounting, and auditing clerks	Line item	43-9081	Proofreaders and copy markers	Line item
43-3041	Gaming cage workers	Line item	43-9111	Statistical assistants	Line item
43-3051	Payroll and timekeeping clerks	Line item	43-9199	Office and administrative support workers, all other	Line item
43-3061	Procurement clerks	Line item	45-0000	Farming, fishing, and forestry occupations	Summary
43-3071	Tellers	Line item	45-1000	Supervisors, farming, fishing, and forestry workers	Line item
43-4000	Information and record clerks	Summary	45-1011	First-line supervisors/managers of farming, fishing, and forestry workers	Exclude
43-4011	Brokerage clerks	Line item	45-1012	Farm labor contractors	Exclude
43-4021	Correspondence clerks	Line item	45-2000	Agricultural workers	Summary
43-4031	Court, municipal, and license clerks	Line item	45-2011	Agricultural inspectors	Line item
43-4041	Credit authorizers, checkers, and clerks	Line item	45-2021	Animal breeders	Line item
43-4051	Customer service representatives	Line item	45-2041	Graders and sorters, agricultural products	Line item
43-4061	Eligibility interviewers, government programs	Line item	45-2090	Miscellaneous agricultural workers	Summary
43-4071	File clerks	Line item	45-2091	Agricultural equipment operators	Line item
43-4081	Hotel, motel, and resort desk clerks	Line item	45-2092	Farmworkers and laborers, crop, nursery, and greenhouse	Line item
43-4111	Interviewers, except eligibility and loan	Line item	45-2093	Farmworkers, farm and ranch animals	Line item
43-4121	Library assistants, clerical	Line item	45-2099	Agricultural workers, all other	Line item
43-4131	Loan interviewers and clerks	Line item	45-3000	Fishing and hunting workers	Summary
43-4141	New accounts clerks	Line item	45-3011	Fishers and related fishing workers	Line item
43-4151	Order clerks	Line item	45-3021	Hunters and trappers	Line item
43-4161	Human resources assistants, except payroll and timekeeping	Line item	45-4000	Forest, conservation, and logging workers	Summary
43-4171	Receptionists and information clerks	Line item	45-4011	Forest and conservation workers	Line item
43-4181	Reservation and transportation ticket agents and travel clerks	Line item	45-4020	Logging workers	Summary
43-4199	Information and record clerks, all other	Line item	45-4021	Fallers	Line item
43-5000	Material recording, scheduling, dispatching, and distributing occupations	Summary	45-4022	Logging equipment operators	Line item
43-5011	Cargo and freight agents	Line item	45-4023	Log graders and scalers	Line item
43-5021	Couriers and messengers	Line item	45-4029	Logging workers, all other	Line item
43-5030	Dispatchers	Summary	47-0000	Construction and extraction occupations	Summary
43-5031	Police, fire, and ambulance dispatchers	Line item	47-1000	Supervisors, construction and extraction workers	Summary
43-5032	Dispatchers, except police, fire, and ambulance	Line item	47-1011	First-line supervisors/managers of construction trades and extraction workers	Line item
43-5041	Meter readers, utilities	Line item	47-2000	Construction trades and related workers	Summary
43-5050	Postal service workers	Summary	47-2011	Boilermakers	Line item
43-5051	Postal service clerks	Line item	47-2020	Brickmasons, blockmasons, and stonemasons	Summary
43-5052	Postal service mail carriers	Line item	47-2021	Brickmasons and blockmasons	Line item
43-5053	Postal service mail sorters, processors, and processing machine operators	Line item	47-2022	Stonemasons	Line item
43-5061	Production, planning, and expediting clerks	Line item	47-2031	Carpenters	Line item
43-5071	Shipping, receiving, and traffic clerks	Line item	47-2040	Carpet, floor, and tile installers and finishers	Summary
43-5081	Stock clerks and order fillers	Line item	47-2041	Carpet installers	Line item
43-5111	Weighers, measurers, checkers, and samplers, recordkeeping	Line item	47-2042	Floor layers, except carpet, wood, and hard tiles	Line item
43-6000	Secretaries and administrative assistants	Summary	47-2043	Floor sanders and finishers	Line item
43-6011	Executive secretaries and administrative assistants	Line item	47-2044	Tile and marble setters	Line item
43-6012	Legal secretaries	Line item	47-2050	Cement masons, concrete finishers, and terrazzo workers	Summary
43-6013	Medical secretaries	Line item	47-2051	Cement masons and concrete finishers	Line item
43-6014	Secretaries, except legal, medical, and executive	Line item	47-2053	Terrazzo workers and finishers	Line item
			47-2061	Construction laborers	Line item
			47-2070	Construction equipment operators	Summary

Table III-1. National Employment Matrix occupational directory, 2004 — Continued

Matrix code	Matrix occupation title	Occupation type	Matrix code	Matrix occupation title	Occupation type
47-2071	Paving, surfacing, and tamping equipment operators	Line item	47-5051	Rock splitters, quarry	Line item
47-2072	Pile-driver operators	Line item	47-5061	Roof bolters, mining	Line item
47-2073	Operating engineers and other construction equipment operators	Line item	47-5071	Roustabouts, oil and gas	Line item
47-2080	Drywall installers, ceiling tile installers, and tapers	Summary	47-5081	Helpers—Extraction workers	Line item
47-2081	Drywall and ceiling tile installers	Line item	47-5099	Extraction workers, all other	Line item
47-2082	Tapers	Line item	49-0000	Installation, maintenance, and repair occupations	Summary
47-2111	Electricians	Line item	49-1000	Supervisors of installation, maintenance, and repair workers	Summary
47-2121	Glaziers	Line item	49-1011	First-line supervisors/managers of mechanics, installers, and repairers	Line item
47-2130	Insulation workers	Summary	49-2000	Electrical and electronic equipment mechanics, installers, and repairers	Summary
47-2131	Insulation workers, floor, ceiling, and wall	Line item	49-2011	Computer, automated teller, and office machine repairers	Line item
47-2132	Insulation workers, mechanical	Line item	49-2020	Radio and telecommunications equipment installers and repairers	Summary
47-2140	Painters and paperhangers	Summary	49-2021	Radio mechanics	Line item
47-2141	Painters, construction and maintenance	Line item	49-2022	Telecommunications equipment installers and repairers, except line installers	Line item
47-2142	Paperhangers	Line item	49-2090	Miscellaneous electrical and electronic equipment mechanics, installers, and repairers	Summary
47-2150	Pipelayers, plumbers, pipefitters, and steamfitters	Summary	49-2091	Avionics technicians	Line item
47-2151	Pipelayers	Line item	49-2092	Electric motor, power tool, and related repairers	Line item
47-2152	Plumbers, pipefitters, and steamfitters	Line item	49-2093	Electrical and electronics installers and repairers, transportation equipment	Line item
47-2161	Plasterers and stucco masons	Line item	49-2094	Electrical and electronics repairers, commercial and industrial equipment	Line item
47-2171	Reinforcing iron and rebar workers	Line item	49-2095	Electrical and electronics repairers, powerhouse, substation, and relay	Line item
47-2181	Roofers	Line item	49-2096	Electronic equipment installers and repairers, motor vehicles	Line item
47-2211	Sheet metal workers	Line item	49-2097	Electronic home entertainment equipment installers and repairers	Line item
47-2221	Structural iron and steel workers	Line item	49-2098	Security and fire alarm systems installers	Line item
47-3000	Helpers, construction trades	Summary	49-3000	Vehicle and mobile equipment mechanics, installers, and repairers	Summary
47-3010	Helpers, construction trades	Summary	49-3011	Aircraft mechanics and service technicians	Line item
47-3011	Helpers—Brickmasons, blockmasons, stonemasons, and tile and marble setters	Line item	49-3020	Automotive technicians and repairers	Summary
47-3012	Helpers—Carpenters	Line item	49-3021	Automotive body and related repairers	Line item
47-3013	Helpers—Electricians	Line item	49-3022	Automotive glass installers and repairers	Line item
47-3014	Helpers—Painters, paperhangers, plasterers, and stucco masons	Line item	49-3023	Automotive service technicians and mechanics	Line item
47-3015	Helpers—Pipelayers, plumbers, pipefitters, and steamfitters	Line item	49-3031	Bus and truck mechanics and diesel engine specialists	Line item
47-3016	Helpers—Roofers	Line item	49-3040	Heavy vehicle and mobile equipment service technicians and mechanics	Summary
47-3019	Helpers, construction trades, all other	Line item	49-3041	Farm equipment mechanics	Line item
47-4000	Other construction and related workers	Summary	49-3042	Mobile heavy equipment mechanics, except engines	Line item
47-4011	Construction and building inspectors	Line item	49-3043	Rail car repairers	Line item
47-4021	Elevator installers and repairers	Line item	49-3050	Small engine mechanics	Summary
47-4031	Fence erectors	Line item	49-3051	Motorboat mechanics	Line item
47-4041	Hazardous materials removal workers	Line item	49-3052	Motorcycle mechanics	Line item
47-4051	Highway maintenance workers	Line item	49-3053	Outdoor power equipment and other small engine mechanics	Line item
47-4061	Rail-track laying and maintenance equipment operators	Line item	49-3090	Miscellaneous vehicle and mobile equipment mechanics, installers, and repairers	Summary
47-4071	Septic tank servicers and sewer pipe cleaners	Line item	49-3091	Bicycle repairers	Line item
47-4090	Miscellaneous construction and related workers	Summary	49-3092	Recreational vehicle service technicians	Line item
47-4091	Segmental pavers	Line item	49-3093	Tire repairers and changers	Line item
47-4099	Construction and related workers, all other	Line item	49-9000	Other installation, maintenance, and repair occupations	Summary
47-5000	Extraction workers	Summary	49-9010	Control and valve installers and repairers	Summary
47-5010	Derrick, rotary drill, and service unit operators, oil, gas, and mining	Summary			
47-5011	Derrick operators, oil and gas	Line item			
47-5012	Rotary drill operators, oil and gas	Line item			
47-5013	Service unit operators, oil, gas, and mining	Line item			
47-5021	Earth drillers, except oil and gas	Line item			
47-5031	Explosives workers, ordnance handling experts, and blasters	Line item			
47-5040	Mining machine operators	Summary			
47-5041	Continuous mining machine operators	Line item			
47-5042	Mine cutting and channeling machine operators	Line item			
47-5049	Mining machine operators, all other	Line item			

Table III-1. National Employment Matrix occupational directory, 2004 — Continued

Matrix code	Matrix occupation title	Occupation type	Matrix code	Matrix occupation title	Occupation type
49-9011	Mechanical door repairers	Line item	51-3021	Butchers and meat cutters	Line item
49-9012	Control and valve installers and repairers, except mechanical door	Line item	51-3022	Meat, poultry, and fish cutters and trimmers	Line item
49-9021	Heating, air conditioning, and refrigeration mechanics and installers	Line item	51-3023	Slaughterers and meat packers	Line item
49-9031	Home appliance repairers	Line item	51-3090	Miscellaneous food processing workers	Summary
49-9040	Industrial machinery installation, repair, and maintenance workers	Summary	51-3091	Food and tobacco roasting, baking, and drying machine operators and tenders	Line item
49-9041	Industrial machinery mechanics	Line item	51-3092	Food batchmakers	Line item
49-9042	Maintenance and repair workers, general	Line item	51-3093	Food cooking machine operators and tenders	Line item
49-9043	Maintenance workers, machinery	Line item	51-4000	Metal workers and plastic workers	Summary
49-9044	Millwrights	Line item	51-4010	Computer control programmers and operators	Summary
49-9045	Refractory materials repairers, except brickmasons	Line item	51-4011	Computer-controlled machine tool operators, metal and plastic	Line item
49-9050	Line installers and repairers	Summary	51-4012	Numerical tool and process control programmers	Line item
49-9051	Electrical power-line installers and repairers	Line item	51-4020	Forming machine setters, operators, and tenders, metal and plastic	Summary
49-9052	Telecommunications line installers and repairers	Line item	51-4021	Extruding and drawing machine setters, operators, and tenders, metal and plastic	Line item
49-9060	Precision instrument and equipment repairers	Summary	51-4022	Forging machine setters, operators, and tenders, metal and plastic	Line item
49-9061	Camera and photographic equipment repairers	Line item	51-4023	Rolling machine setters, operators, and tenders, metal and plastic	Line item
49-9062	Medical equipment repairers	Line item	51-4030	Machine tool cutting setters, operators, and tenders, metal and plastic	Summary
49-9063	Musical instrument repairers and tuners	Line item	51-4031	Cutting, punching, and press machine setters, operators, and tenders, metal and plastic	Line item
49-9064	Watch repairers	Line item	51-4032	Drilling and boring machine tool setters, operators, and tenders, metal and plastic	Line item
49-9069	Precision instrument and equipment repairers, all other	Line item	51-4033	Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic	Line item
49-9090	Miscellaneous installation, maintenance, and repair workers	Summary	51-4034	Lathe and turning machine tool setters, operators, and tenders, metal and plastic	Line item
49-9091	Coin, vending, and amusement machine servicers and repairers	Line item	51-4035	Milling and planing machine setters, operators, and tenders, metal and plastic	Line item
49-9092	Commercial divers	Line item	51-4041	Machinists	Line item
49-9093	Fabric menders, except garment	Line item	51-4050	Metal furnace and kiln operators and tenders	Summary
49-9094	Locksmiths and safe repairers	Line item	51-4051	Metal-refining furnace operators and tenders	Line item
49-9095	Manufactured building and mobile home installers	Line item	51-4052	Pourers and casters, metal	Line item
49-9096	Riggers	Line item	51-4060	Model makers and patternmakers, metal and plastic	Summary
49-9097	Signal and track switch repairers	Line item	51-4061	Model makers, metal and plastic	Line item
49-9098	Helpers--Installation, maintenance, and repair workers	Line item	51-4062	Patternmakers, metal and plastic	Line item
49-9099	Installation, maintenance, and repair workers, all other	Line item	51-4070	Molders and molding machine setters, operators, and tenders, metal and plastic	Summary
51-0000	Production occupations	Summary	51-4071	Foundry mold and coremakers	Line item
51-1000	Supervisors, production workers	Summary	51-4072	Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic	Line item
51-1011	First-line supervisors/managers of production and operating workers	Line item	51-4081	Multiple machine tool setters, operators, and tenders, metal and plastic	Line item
51-2000	Assemblers and fabricators	Summary	51-4111	Tool and die makers	Line item
51-2011	Aircraft structure, surfaces, rigging, and systems assemblers	Line item	51-4120	Welding, soldering, and brazing workers	Summary
51-2020	Electrical, electronics, and electromechanical assemblers	Summary	51-4121	Welders, cutters, solderers, and brazers	Line item
51-2021	Coil winders, tapers, and finishers	Line item	51-4122	Welding, soldering, and brazing machine setters, operators, and tenders	Line item
51-2022	Electrical and electronic equipment assemblers	Line item	51-4190	Miscellaneous metalworkers and plastic workers	Summary
51-2023	Electromechanical equipment assemblers	Line item			
51-2031	Engine and other machine assemblers	Line item			
51-2041	Structural metal fabricators and fitters	Line item			
51-2090	Miscellaneous assemblers and fabricators	Summary			
51-2091	Fiberglass laminators and fabricators	Line item			
51-2092	Team assemblers	Line item			
51-2093	Timing device assemblers, adjusters, and calibrators	Line item			
51-2099	Assemblers and fabricators, all other	Line item			
51-3000	Food processing occupations	Summary			
51-3011	Bakers	Line item			
51-3020	Butchers and other meat, poultry, and fish processing workers	Summary			

Table III-1. National Employment Matrix occupational directory, 2004 — Continued

Matrix code	Matrix occupation title	Occupation type	Matrix code	Matrix occupation title	Occupation type
51-4191	Heat treating equipment setters, operators, and tenders, metal and plastic	Line item	51-8021	Stationary engineers and boiler operators	Line item
51-4192	Lay-out workers, metal and plastic	Line item	51-8031	Water and liquid waste treatment plant and system operators	Line item
51-4193	Plating and coating machine setters, operators, and tenders, metal and plastic	Line item	51-8090	Miscellaneous plant and system operators	Summary
51-4194	Tool grinders, filers, and sharpeners	Line item	51-8091	Chemical plant and system operators	Line item
51-4199	Metal workers and plastic workers, all other	Line item	51-8092	Gas plant operators	Line item
51-5000	Printing occupations	Summary	51-8093	Petroleum pump system operators, refinery operators, and gaugers	Line item
51-5010	Bookbinders and bindery workers	Summary	51-8099	Plant and system operators, all other	Line item
51-5011	Bindery workers	Line item	51-9000	Other production occupations	Summary
51-5012	Bookbinders	Line item	51-9010	Chemical processing machine setters, operators, and tenders	Summary
51-5020	Printers	Summary	51-9011	Chemical equipment operators and tenders	Line item
51-5021	Job printers	Line item	51-9012	Separating, filtering, clarifying, precipitating, and still machine setters, operators, and tenders	Line item
51-5022	Prepress technicians and workers	Line item	51-9020	Crushing, grinding, polishing, mixing, and blending workers	Summary
51-5023	Printing machine operators	Line item	51-9021	Crushing, grinding, and polishing machine setters, operators, and tenders	Line item
51-6000	Textile, apparel, and furnishings occupations	Summary	51-9022	Grinding and polishing workers, hand	Line item
51-6011	Laundry and dry-cleaning workers	Line item	51-9023	Mixing and blending machine setters, operators, and tenders	Line item
51-6021	Pressers, textile, garment, and related materials	Line item	51-9030	Cutting workers	Summary
51-6031	Sewing machine operators	Line item	51-9031	Cutters and trimmers, hand	Line item
51-6040	Shoe and leather workers	Summary	51-9032	Cutting and slicing machine setters, operators, and tenders	Line item
51-6041	Shoe and leather workers and repairers	Line item	51-9041	Extruding, forming, pressing, and compacting machine setters, operators, and tenders	Line item
51-6042	Shoe machine operators and tenders	Line item	51-9051	Furnace, kiln, oven, drier, and kettle operators and tenders	Line item
51-6050	Tailors, dressmakers, and sewers	Summary	51-9061	Inspectors, testers, sorters, samplers, and weighers	Line item
51-6051	Sewers, hand	Line item	51-9071	Jewelers and precious stone and metal workers	Line item
51-6052	Tailors, dressmakers, and custom sewers	Line item	51-9080	Medical, dental, and ophthalmic laboratory technicians	Summary
51-6060	Textile machine setters, operators, and tenders	Summary	51-9081	Dental laboratory technicians	Line item
51-6061	Textile bleaching and dyeing machine operators and tenders	Line item	51-9082	Medical appliance technicians	Line item
51-6062	Textile cutting machine setters, operators, and tenders	Line item	51-9083	Ophthalmic laboratory technicians	Line item
51-6063	Textile knitting and weaving machine setters, operators, and tenders	Line item	51-9111	Packaging and filling machine operators and tenders	Line item
51-6064	Textile winding, twisting, and drawing out machine setters, operators, and tenders	Line item	51-9120	Painting workers	Summary
51-6090	Miscellaneous textile, apparel, and furnishings workers	Summary	51-9121	Coating, painting, and spraying machine setters, operators, and tenders	Line item
51-6091	Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers	Line item	51-9122	Painters, transportation equipment	Line item
51-6092	Fabric and apparel patternmakers	Line item	51-9123	Painting, coating, and decorating workers	Line item
51-6093	Upholsterers	Line item	51-9130	Photographic process workers and processing machine operators	Summary
51-6099	Textile, apparel, and furnishings workers, all other	Line item	51-9131	Photographic process workers	Line item
51-7000	Woodworkers	Summary	51-9132	Photographic processing machine operators	Line item
51-7011	Cabinetmakers and bench carpenters	Line item	51-9141	Semiconductor processors	Line item
51-7021	Furniture finishers	Line item	51-9190	Miscellaneous production workers	Summary
51-7030	Model makers and patternmakers, wood	Summary	51-9191	Cementing and gluing machine operators and tenders	Line item
51-7031	Model makers, wood	Line item	51-9192	Cleaning, washing, and metal pickling equipment operators and tenders	Line item
51-7032	Patternmakers, wood	Line item	51-9193	Cooling and freezing equipment operators and tenders	Line item
51-7040	Woodworking machine setters, operators, and tenders	Summary	51-9194	Etchers and engravers	Line item
51-7041	Sawing machine setters, operators, and tenders, wood	Line item	51-9195	Molders, shapers, and casters, except metal and plastic	Line item
51-7042	Woodworking machine setters, operators, and tenders, except sawing	Line item	51-9196	Paper goods machine setters, operators, and tenders	Line item
51-7099	Woodworkers, all other	Line item	51-9197	Tire builders	Line item
51-8000	Plant and system operators	Summary			
51-8010	Power plant operators, distributors, and dispatchers	Summary			
51-8011	Nuclear power reactor operators	Line item			
51-8012	Power distributors and dispatchers	Line item			
51-8013	Power plant operators	Line item			

Table III-1. National Employment Matrix occupational directory, 2004 — Continued

Matrix code	Matrix occupation title	Occupation type	Matrix code	Matrix occupation title	Occupation type
51-9198	Helpers--Production workers	Line item	53-5000	Water transportation occupations	Summary
51-9199	Production workers, all other	Line item	53-5011	Sailors and marine oilers	Line item
53-0000	Transportation and material moving occupations	Summary	53-5020	Ship and boat captains and operators	Summary
53-1000	Supervisors, transportation and material moving workers	Summary	53-5021	Captains, mates, and pilots of water vessels	Line item
53-1011	Aircraft cargo handling supervisors	Line item	53-5022	Motorboat operators	Line item
53-1021	First-line supervisors/managers of helpers, laborers, and material movers, hand	Line item	53-5031	Ship engineers	Line item
53-1031	First-line supervisors/managers of transportation and material-moving machine and vehicle operators	Line item	53-6000	Other transportation workers	Summary
53-2000	Air transportation occupations	Summary	53-6011	Bridge and lock tenders	Line item
53-2010	Aircraft pilots and flight engineers	Summary	53-6021	Parking lot attendants	Line item
53-2011	Airline pilots, copilots, and flight engineers	Line item	53-6031	Service station attendants	Line item
53-2012	Commercial pilots	Line item	53-6041	Traffic technicians	Line item
53-2020	Air traffic controllers and airfield operations specialists	Summary	53-6051	Transportation inspectors	Line item
53-2021	Air traffic controllers	Line item	53-6099	Transportation workers, all other	Line item
53-2022	Airfield operations specialists	Line item	53-7000	Material moving occupations	Summary
53-3000	Motor vehicle operators	Summary	53-7011	Conveyor operators and tenders	Line item
53-3011	Ambulance drivers and attendants, except emergency medical technicians	Line item	53-7021	Crane and tower operators	Line item
53-3020	Bus drivers	Summary	53-7030	Dredge, excavating, and loading machine operators	Summary
53-3021	Bus drivers, transit and intercity	Line item	53-7031	Dredge operators	Line item
53-3022	Bus drivers, school	Line item	53-7032	Excavating and loading machine and dragline operators	Line item
53-3030	Driver/sales workers and truck drivers	Summary	53-7033	Loading machine operators, underground mining	Line item
53-3031	Driver/sales workers	Line item	53-7041	Hoist and winch operators	Line item
53-3032	Truck drivers, heavy and tractor-trailer	Line item	53-7051	Industrial truck and tractor operators	Line item
53-3033	Truck drivers, light or delivery services	Line item	53-7060	Laborers and material movers, hand	Summary
53-3041	Taxi drivers and chauffeurs	Line item	53-7061	Cleaners of vehicles and equipment	Line item
53-3099	Motor vehicle operators, all other	Line item	53-7062	Laborers and freight, stock, and material movers, hand	Line item
53-4000	Rail transportation occupations	Summary	53-7063	Machine feeders and offbearers	Line item
53-4010	Locomotive engineers and operators	Line item	53-7064	Packers and packagers, hand	Line item
53-4011	Locomotive engineers	Exclude	53-7070	Pumping station operators	Summary
53-4012	Locomotive firers	Exclude	53-7071	Gas compressor and gas pumping station operators	Line item
53-4013	Rail yard engineers, dinkey operators, and hostlers	Exclude	53-7072	Pump operators, except wellhead pumpers	Line item
53-4021	Railroad brake, signal, and switch operators	Line item	53-7073	Wellhead pumpers	Line item
53-4031	Railroad conductors and yardmasters	Line item	53-7081	Refuse and recyclable material collectors	Line item
53-4041	Subway and streetcar operators	Line item	53-7111	Shuttle car operators	Line item
53-4099	Rail transportation workers, all other	Line item	53-7121	Tank car, truck, and ship loaders	Line item
			53-7199	Material moving workers, all other	Line item

\* Non-NAICS codes used for these summary occupations

Table III-2. National Employment Matrix industry directory, 2004

Matrix code	Valid NAICS code?	2002 NAICS coverage	Matrix industry title	Industry type
000001	NO	N.A.	Total employment, all workers .....	Summary
000500	NO	N.A.	Total wage and salary employment .....	Summary
000520	NO	N.A.	Wage and salary employment, except agriculture, forestry, fishing, hunting, and private households .....	Summary
113300	YES	113300	Logging .....	Summary
113310	YES	113310	Logging .....	Line item
210000	YES	210000	Mining .....	Summary
211000	YES	211000	Oil and gas extraction .....	Summary
211100	YES	211100	Oil and gas extraction .....	Line item
212000	YES	212000	Mining (except oil and gas) .....	Summary
212100	YES	212100	Coal mining .....	Line item
212200	YES	212200	Metal ore mining .....	Line item
212300	YES	212300	Nonmetallic mineral mining and quarrying .....	Line item
213000	YES	213000	Support activities for mining .....	Summary
213100	YES	213100	Support activities for mining .....	Line item
220000	YES	220000	Utilities .....	Summary
221000	YES	221000	Utilities .....	Summary
221100	YES	221100	Electric power generation, transmission and distribution .....	Line item
221200	YES	221200	Natural gas distribution .....	Line item
221300	YES	221300	Water, sewage and other systems .....	Line item
230000	YES	230000	Construction .....	Summary
236000	YES	236000	Construction of buildings .....	Summary
236100	YES	236100	Residential building construction .....	Line item
236200	YES	236200	Nonresidential building construction .....	Line item
237000	YES	237000	Heavy and civil engineering construction .....	Summary
237100	YES	237100	Utility system construction .....	Summary
237130	YES	237130	Power and communication line and related structures construction .....	Line item
2371RR	NO	237110-20	Water and sewer system and all other utility system construction .....	Line item
237200	YES	237200	Land subdivision .....	Line item
237300	YES	237300	Highway, street, and bridge construction .....	Line item
237900	YES	237900	Other heavy and civil engineering construction .....	Line item
238000	YES	238000	Specialty trade contractors .....	Summary
238100	YES	238100	Foundation, structure, and building exterior contractors .....	Summary
238110	YES	238110	Poured concrete foundation and structure contractors .....	Line item
238140	YES	238140	Masonry contractors .....	Line item
238160	YES	238160	Roofing contractors .....	Line item
2381RR	NO	238120,30,50,70,90	Framing contractors and all other foundation, structure, and building exterior contractors .....	Line item
238200	YES	238200	Building equipment contractors .....	Summary
238210	YES	238210	Electrical contractors .....	Line item
238220	YES	238220	Plumbing, heating, and air-conditioning contractors .....	Line item
238290	YES	238290	Other building equipment contractors .....	Line item
238300	YES	238300	Building finishing contractors .....	Summary
238310	YES	238310	Drywall and insulation contractors .....	Line item
238320	YES	238320	Painting and wall covering contractors .....	Line item
2383RR	NO	238330-50,90	Finish carpentry contractors and all other building finishing contractors .....	Line item
238900	YES	238900	Other specialty trade contractors .....	Line item
31-33	NO	31-33	Manufacturing .....	Summary
311000	YES	311000	Food manufacturing .....	Summary
311100	YES	311100	Animal food manufacturing .....	Line item
311200	YES	311200	Grain and oilseed milling .....	Line item
311300	YES	311300	Sugar and confectionery product manufacturing .....	Line item
311400	YES	311400	Fruit and vegetable preserving and specialty food manufacturing .....	Line item
311500	YES	311500	Dairy product manufacturing .....	Line item
311600	YES	311600	Animal slaughtering and processing .....	Line item
311700	YES	311700	Seafood product preparation and packaging .....	Line item
311800	YES	311800	Bakeries and tortilla manufacturing .....	Line item
311900	YES	311900	Other food manufacturing .....	Line item
312000	YES	312000	Beverage and tobacco product manufacturing .....	Summary
312100	YES	312100	Beverage manufacturing .....	Line item
312200	YES	312200	Tobacco manufacturing .....	Line item
313000	YES	313000	Textile mills .....	Summary
313100	YES	313100	Fiber, yarn, and thread mills .....	Line item
313200	YES	313200	Fabric mills .....	Line item

Table III-2. National Employment Matrix industry directory, 2004 — Continued

Matrix code	Valid NAICS code?	2002 NAICS coverage	Matrix industry title	Industry type
313300	YES	313300	Textile and fabric finishing and fabric coating mills.....	Line item
314000	YES	314000	Textile product mills.....	Summary
314100	YES	314100	Textile furnishings mills.....	Line item
314900	YES	314900	Other textile product mills.....	Line item
315000	YES	315000	Apparel manufacturing.....	Summary
315100	YES	315100	Apparel knitting mills.....	Line item
315200	YES	315200	Cut and sew apparel manufacturing.....	Line item
315900	YES	315900	Apparel accessories and other apparel manufacturing.....	Line item
316000	YES	316000	Leather and allied product manufacturing.....	Summary
316200	YES	316200	Footwear manufacturing.....	Line item
321000	YES	321000	Wood product manufacturing.....	Summary
321100	YES	321100	Sawmills and wood preservation.....	Line item
321200	YES	321200	Veneer, plywood, and engineered wood product manufacturing.....	Line item
321900	YES	321900	Other wood product manufacturing.....	Line item
322000	YES	322000	Paper manufacturing.....	Summary
322100	YES	322100	Pulp, paper, and paperboard mills.....	Line item
322200	YES	322200	Converted paper product manufacturing.....	Line item
323000	YES	323000	Printing and related support activities.....	Summary
323100	YES	323100	Printing and related support activities.....	Line item
324000	YES	324000	Petroleum and coal products manufacturing.....	Summary
324100	YES	324100	Petroleum and coal products manufacturing.....	Line item
325000	YES	325000	Chemical manufacturing.....	Summary
325100	YES	325100	Basic chemical manufacturing.....	Line item
325200	YES	325200	Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing.....	Line item
325300	YES	325300	Pesticide, fertilizer, and other agricultural chemical manufacturing.....	Line item
325400	YES	325400	Pharmaceutical and medicine manufacturing.....	Line item
325500	YES	325500	Paint, coating, and adhesive manufacturing.....	Line item
325600	YES	325600	Soap, cleaning compound, and toilet preparation manufacturing.....	Line item
325900	YES	325900	Other chemical product and preparation manufacturing.....	Line item
326000	YES	326000	Plastics and rubber products manufacturing.....	Summary
326100	YES	326100	Plastics product manufacturing.....	Line item
326200	YES	326200	Rubber product manufacturing.....	Line item
327000	YES	327000	Nonmetallic mineral product manufacturing.....	Summary
327100	YES	327100	Clay product and refractory manufacturing.....	Line item
327200	YES	327200	Glass and glass product manufacturing.....	Line item
327300	YES	327300	Cement and concrete product manufacturing.....	Line item
331000	YES	331000	Primary metal manufacturing.....	Summary
331100	YES	331100	Iron and steel mills and ferroalloy manufacturing.....	Line item
331200	YES	331200	Steel product manufacturing from purchased steel.....	Line item
331300	YES	331300	Alumina and aluminum production and processing.....	Line item
331400	YES	331400	Nonferrous metal (except aluminum) production and processing.....	Line item
331500	YES	331500	Foundries.....	Line item
332000	YES	332000	Fabricated metal product manufacturing.....	Summary
332100	YES	332100	Forging and stamping.....	Line item
332200	YES	332200	Cutlery and handtool manufacturing.....	Line item
332300	YES	332300	Architectural and structural metals manufacturing.....	Line item
332400	YES	332400	Boiler, tank, and shipping container manufacturing.....	Line item
332500	YES	332500	Hardware manufacturing.....	Line item
332600	YES	332600	Spring and wire product manufacturing.....	Line item
332700	YES	332700	Machine shops; turned product; and screw, nut, and bolt manufacturing.....	Summary
332710	YES	332710	Machine shops.....	Line item
332720	YES	332720	Turned product and screw, nut, and bolt manufacturing.....	Line item
332800	YES	332800	Coating, engraving, heat treating, and allied activities.....	Line item
332900	YES	332900	Other fabricated metal product manufacturing.....	Line item
333000	YES	333000	Machinery manufacturing.....	Summary
333100	YES	333100	Agriculture, construction, and mining machinery manufacturing.....	Line item
333200	YES	333200	Industrial machinery manufacturing.....	Line item
333300	YES	333300	Commercial and service industry machinery manufacturing.....	Line item
333400	YES	333400	Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing.....	Line item
333500	YES	333500	Metalworking machinery manufacturing.....	Line item
333600	YES	333600	Engine, turbine, and power transmission equipment manufacturing.....	Line item
333900	YES	333900	Other general purpose machinery manufacturing.....	Line item
334000	YES	334000	Computer and electronic product manufacturing.....	Summary
334100	YES	334100	Computer and peripheral equipment manufacturing.....	Line item

Table III-2. National Employment Matrix industry directory, 2004 — Continued

Matrix code	Valid NAICS code?	2002 NAICS coverage	Matrix industry title	Industry type
334200	YES	334200	Communications equipment manufacturing .....	Line item
334300	YES	334300	Audio and video equipment manufacturing .....	Line item
334400	YES	334400	Semiconductor and other electronic component manufacturing .....	Line item
334500	YES	334500	Navigational, measuring, electromedical, and control instruments manufacturing .....	Line item
334600	YES	334600	Manufacturing and reproducing magnetic and optical media .....	Line item
335000	YES	335000	Electrical equipment, appliance, and component manufacturing .....	Summary
335100	YES	335100	Electric lighting equipment manufacturing .....	Line item
335200	YES	335200	Household appliance manufacturing .....	Line item
335300	YES	335300	Electrical equipment manufacturing .....	Line item
335900	YES	335900	Other electrical equipment and component manufacturing .....	Line item
336000	YES	336000	Transportation equipment manufacturing .....	Summary
336100	YES	336100	Motor vehicle manufacturing .....	Line item
336200	YES	336200	Motor vehicle body and trailer manufacturing .....	Line item
336300	YES	336300	Motor vehicle parts manufacturing .....	Line item
336400	YES	336400	Aerospace product and parts manufacturing .....	Line item
336500	YES	336500	Railroad rolling stock manufacturing .....	Line item
336600	YES	336600	Ship and boat building .....	Line item
336900	YES	336900	Other transportation equipment manufacturing .....	Line item
337000	YES	337000	Furniture and related product manufacturing .....	Summary
337100	YES	337100	Household and institutional furniture and kitchen cabinet manufacturing .....	Summary
337110	YES	337110	Wood kitchen cabinet and countertop manufacturing .....	Line item
337120	YES	337120	Household and institutional furniture manufacturing .....	Line item
337200	YES	337200	Office furniture (including fixtures) manufacturing .....	Line item
337900	YES	337900	Other furniture related product manufacturing .....	Line item
339000	YES	339000	Miscellaneous manufacturing .....	Summary
339100	YES	339100	Medical equipment and supplies manufacturing .....	Line item
339900	YES	339900	Other miscellaneous manufacturing .....	Summary
339910	YES	339910	Jewelry and silverware manufacturing .....	Line item
3399RR	NO	339920-50,90	Signs, sporting and athletic goods, and all other miscellaneous manufacturing .....	Line item
420000	YES	420000	Wholesale trade .....	Summary
423000	YES	423000	Merchant wholesalers, durable goods .....	Summary
423100	YES	423100	Motor vehicle and motor vehicle parts and supplies merchant wholesalers .....	Line item
423200	YES	423200	Furniture and home furnishing merchant wholesalers .....	Line item
423300	YES	423300	Lumber and other construction materials merchant wholesalers .....	Line item
423400	YES	423400	Professional and commercial equipment and supplies merchant wholesalers .....	Line item
423500	YES	423500	Metal and mineral (except petroleum) merchant wholesalers .....	Line item
423600	YES	423600	Electrical and electronic goods merchant wholesalers .....	Line item
423700	YES	423700	Hardware, and plumbing and heating equipment and supplies merchant wholesalers .....	Line item
423800	YES	423800	Machinery, equipment, and supplies merchant wholesalers .....	Summary
423820	YES	423820	Farm and garden machinery and equipment merchant wholesalers .....	Line item
4238RR	NO	423810,30-60	Industrial machinery and all other machinery, equipment, and supplies merchant wholesalers .....	Line item
423900	YES	423900	Miscellaneous durable goods merchant wholesalers .....	Line item
424000	YES	424000	Merchant wholesalers, nondurable goods .....	Summary
424100	YES	424100	Paper and paper product merchant wholesalers .....	Line item
424200	YES	424200	Drugs and druggists' sundries merchant wholesalers .....	Line item
424300	YES	424300	Apparel, piece goods, and notions merchant wholesalers .....	Line item
424400	YES	424400	Grocery and related product wholesalers .....	Line item
424500	YES	424500	Farm product raw material merchant wholesalers .....	Line item
424600	YES	424600	Chemical and allied products merchant wholesalers .....	Line item
424700	YES	424700	Petroleum and petroleum products merchant wholesalers .....	Line item
424800	YES	424800	Beer, wine, and distilled alcoholic beverage merchant wholesalers .....	Line item
424900	YES	424900	Miscellaneous nondurable goods merchant wholesalers .....	Line item
425000	YES	425000	Wholesale electronic markets and agents and brokers .....	Summary
425100	YES	425100	Wholesale electronic markets and agents and brokers .....	Line item
44-45	NO	44-45	Retail trade .....	Summary
441000	YES	441000	Motor vehicle and parts dealers .....	Summary
441100	YES	441100	Automobile dealers .....	Line item
441200	YES	441200	Other motor vehicle dealers .....	Line item
441300	YES	441300	Automotive parts, accessories, and tire stores .....	Line item
442000	YES	442000	Furniture and home furnishings stores .....	Summary
442100	YES	442100	Furniture stores .....	Line item
442200	YES	442200	Home furnishings stores .....	Line item
443000	YES	443000	Electronics and appliance stores .....	Summary
443100	YES	443100	Electronics and appliance stores .....	Line item

Table III-2. National Employment Matrix industry directory, 2004 — Continued

Matrix code	Valid NAICS code?	2002 NAICS coverage	Matrix industry title	Industry type
444000	YES	444000	Building material and garden equipment and supplies dealers .....	Summary
444100	YES	444100	Building material and supplies dealers .....	Line item
444200	YES	444200	Lawn and garden equipment and supplies stores .....	Line item
445000	YES	445000	Food and beverage stores .....	Summary
445100	YES	445100	Grocery stores .....	Line item
445200	YES	445200	Specialty food stores .....	Line item
445300	YES	445300	Beer, wine, and liquor stores .....	Line item
446000	YES	446000	Health and personal care stores .....	Summary
446100	YES	446100	Health and personal care stores .....	Summary
446110	YES	446110	Pharmacies and drug stores .....	Line item
4461RR	NO	446120,30,90	Cosmetic, beauty supply, and all other health and personal care stores .....	Line item
447000	YES	447000	Gasoline stations .....	Summary
447100	YES	447100	Gasoline stations .....	Line item
448000	YES	448000	Clothing and clothing accessories stores .....	Summary
448100	YES	448100	Clothing stores .....	Line item
448200	YES	448200	Shoe stores .....	Line item
448300	YES	448300	Jewelry, luggage, and leather goods stores .....	Line item
451000	YES	451000	Sporting goods, hobby, book, and music stores .....	Summary
451100	YES	451100	Sporting goods, hobby, and musical instrument stores .....	Summary
451110	YES	451110	Sporting goods stores .....	Line item
4511RR	NO	451120-40	Hobby, toy, sewing, and musical instrument stores .....	Line item
451200	YES	451200	Book, periodical, and music stores .....	Line item
452000	YES	452000	General merchandise stores .....	Summary
452100	YES	452100	Department stores .....	Line item
452900	YES	452900	Other general merchandise stores .....	Line item
453000	YES	453000	Miscellaneous store retailers .....	Summary
453100	YES	453100	Florists .....	Line item
453200	YES	453200	Office supplies, stationery, and gift stores .....	Line item
453300	YES	453300	Used merchandise stores .....	Line item
453900	YES	453900	Other miscellaneous store retailers .....	Line item
454000	YES	454000	Nonstore retailers .....	Summary
454100	YES	454100	Electronic shopping and mail-order houses .....	Line item
454200	YES	454200	Vending machine operators .....	Line item
454300	YES	454300	Direct selling establishments .....	Line item
48-49	NO	48-49	Transportation and warehousing .....	Summary
481000	YES	481000	Air transportation .....	Summary
481100	YES	481100	Scheduled air transportation .....	Line item
481200	YES	481200	Nonscheduled air transportation .....	Line item
482000	YES	482000	Rail transportation .....	Summary
482100	YES	482100	Rail transportation .....	Line item
483000	YES	483000	Water transportation .....	Summary
483100	YES	483100	Deep sea, coastal, and great lakes water transportation .....	Line item
483200	YES	483200	Inland water transportation .....	Line item
484000	YES	484000	Truck transportation .....	Summary
484100	YES	484100	General freight trucking .....	Line item
484200	YES	484200	Specialized freight trucking .....	Line item
485000	YES	485000	Transit and ground passenger transportation .....	Summary
485100	YES	485100	Urban transit systems .....	Line item
485200	YES	485200	Interurban and rural bus transportation .....	Line item
485300	YES	485300	Taxi and limousine service .....	Line item
485400	YES	485400	School and employee bus transportation .....	Line item
485500	YES	485500	Charter bus industry .....	Line item
485900	YES	485900	Other transit and ground passenger transportation .....	Line item
486000	YES	486000	Pipeline transportation .....	Line item
487000	YES	487000	Scenic and sightseeing transportation .....	Line item
488000	YES	488000	Support activities for transportation .....	Summary
488100	YES	488100	Support activities for air transportation .....	Line item
488300	YES	488300	Support activities for water transportation .....	Line item
488400	YES	488400	Support activities for road transportation .....	Line item
488500	YES	488500	Freight transportation arrangement .....	Line item
492000	YES	492000	Couriers and messengers .....	Summary
492100	YES	492100	Couriers .....	Line item
492200	YES	492200	Local messengers and local delivery .....	Line item
493000	YES	493000	Warehousing and storage .....	Summary
493100	YES	493100	Warehousing and storage .....	Line item

Table III-2. National Employment Matrix industry directory, 2004 — Continued

Matrix code	Valid NAICS code?	2002 NAICS coverage	Matrix industry title	Industry type
510000	YES	510000	Information .....	Summary
511000	YES	511000	Publishing industries (except Internet) .....	Summary
511100	YES	511100	Newspaper, periodical, book, and directory publishers .....	Summary
511110	YES	511110	Newspaper publishers .....	Line item
5111RR	NO	511120-40,90	Periodical publishers and all other book and directory publishers .....	Line item
511200	YES	511200	Software publishers .....	Line item
512000	YES	512000	Motion picture, video, and sound recording industries .....	Summary
512100	YES	512100	Motion picture and video industries .....	Summary
512130	YES	512130	Motion picture and video exhibition .....	Line item
5121RR	NO	512110,20,90	Motion picture and video production, distribution, and all other related industries .....	Line item
512200	YES	512200	Sound recording industries .....	Line item
515000	YES	515000	Broadcasting (except Internet) .....	Summary
515100	YES	515100	Radio and television broadcasting .....	Summary
515110	YES	515110	Radio broadcasting .....	Line item
515120	YES	515120	Television broadcasting .....	Line item
515200	YES	515200	Cable and other subscription programming .....	Line item
517000	YES	517000	Telecommunications .....	Summary
517100	YES	517100	Wired telecommunications carriers .....	Line item
517200	YES	517200	Wireless telecommunications carriers (except satellite) .....	Line item
517300	YES	517300	Telecommunications resellers .....	Line item
517500	YES	517500	Cable and other program distribution .....	Line item
516890	NO	516,8,9	Internet and other information services .....	Summary
516000	YES	516000	Internet publishing and broadcasting .....	Summary
516100	YES	516100	Internet publishing and broadcasting .....	Line item
518000	YES	518000	Internet service providers, Web search portals, and data processing services .....	Summary
518100	YES	518100	Internet service providers and Web search portals .....	Line item
518200	YES	518200	Data processing, hosting, and related services .....	Line item
519000	YES	519000	Other information services .....	Summary
519100	YES	519100	Other information services .....	Line item
520000	YES	520000	Finance and insurance .....	Summary
521-2	NO	521-2	Monetary authorities, credit intermediation, and related activities .....	Summary
521000	YES	521000	Monetary authorities - central bank .....	Summary
521100	YES	521100	Monetary authorities - central bank .....	Line item
522000	YES	522000	Credit intermediation and related activities .....	Summary
522100	YES	522100	Depository credit intermediation .....	Line item
522200	YES	522200	Nondepository credit intermediation .....	Summary
522290	YES	522290	Other nondepository credit intermediation, including real estate credit and consumer lending .....	Line item
5222RR	NO	522210-20	Credit card issuing and sales financing .....	Line item
522300	YES	522300	Activities related to credit intermediation .....	Line item
523000	YES	523000	Securities, commodity contracts, and other financial investments and related activities .....	Summary
523900	YES	523900	Other financial investment activities .....	Line item
524000	YES	524000	Insurance carriers and related activities .....	Summary
524100	YES	524100	Insurance carriers .....	Summary
524120	YES	524120	Direct insurance (except life, health, and medical) carriers .....	Line item
5241RR	NO	524110,30	Direct life, health, and medical insurance carriers and reinsurance carriers .....	Line item
524200	YES	524200	Agencies, brokerages, and other insurance related activities .....	Summary
524210	YES	524210	Insurance agencies and brokerages .....	Line item
524290	YES	524290	Other insurance related activities .....	Line item
525000	YES	525000	Funds, trusts, and other financial vehicles .....	Summary
525100	YES	525100	Insurance and employee benefit funds .....	Line item
525900	YES	525900	Other investment pools and funds .....	Line item
530000	YES	530000	Real estate and rental and leasing .....	Summary
531000	YES	531000	Real estate .....	Summary
531100	YES	531100	Lessors of real estate .....	Line item
531200	YES	531200	Offices of real estate agents and brokers .....	Line item
531300	YES	531300	Activities related to real estate .....	Line item
532000	YES	532000	Rental and leasing services .....	Summary
532100	YES	532100	Automotive equipment rental and leasing .....	Line item
5322-3	NO	5322-3	Consumer goods rental and general rental centers .....	Summary
532200	YES	532200	Consumer goods rental .....	Line item
532300	YES	532300	General rental centers .....	Line item
532400	YES	532400	Commercial and industrial machinery and equipment rental and leasing .....	Line item
533000	YES	533000	Lessors of nonfinancial intangible assets (except copyrighted works) .....	Summary
533100	YES	533100	Lessors of nonfinancial intangible assets (except copyrighted works) .....	Line item

Table III-2. National Employment Matrix industry directory, 2004 — Continued

Matrix code	Valid NAICS code?	2002 NAICS coverage	Matrix industry title	Industry type
540000	YES	540000	Professional, scientific, and technical services .....	Summary
541000	YES	541000	Professional, scientific, and technical services .....	Summary
541100	YES	541100	Legal services .....	Line item
541200	YES	541200	Accounting, tax preparation, bookkeeping, and payroll services.....	Line item
541300	YES	541300	Architectural, engineering, and related services.....	Summary
541312	NO	541310-20	Architectural and landscape architectural services .....	Line item
541337	NO	541330-70	Engineering, surveying, mapping, building inspection, and drafting services .....	Line item
541380	YES	541380	Testing laboratories .....	Line item
541400	YES	541400	Specialized design services .....	Line item
541500	YES	541500	Computer systems design and related services.....	Line item
541600	YES	541600	Management, scientific, and technical consulting services .....	Line item
541700	YES	541700	Scientific research and development services .....	Summary
541710	YES	541710	Research and development in the physical, engineering, and life sciences .....	Line item
541720	YES	541720	Research and development in the social sciences and humanities .....	Line item
541800	YES	541800	Advertising and related services.....	Line item
541900	YES	541900	Other professional, scientific, and technical services.....	Summary
541920	YES	541920	Photographic services .....	Line item
541940	YES	541940	Veterinary services .....	Line item
5419RR	NO	541910,30,90	Marketing research, public opinion polling, and all other professional, scientific, and technical services .....	Line item
550000	YES	550000	Management of companies and enterprises .....	Summary
551000	YES	551000	Management of companies and enterprises .....	Summary
551100	YES	551100	Management of companies and enterprises .....	Line item
560000	YES	560000	Administrative and support and waste management and remediation services.....	Summary
561000	YES	561000	Administrative and support services .....	Summary
561100	YES	561100	Office administrative services.....	Line item
561200	YES	561200	Facilities support services .....	Line item
561300	YES	561300	Employment services .....	Line item
561400	YES	561400	Business support services.....	Summary
561420	YES	561420	Telephone call centers.....	Line item
5614RR	NO	561410, 30-90	Collection agencies and all other business support services .....	Line item
561500	YES	561500	Travel arrangement and reservation services .....	Summary
561510	YES	561510	Travel agencies .....	Line item
5615RR	NO	561520-90	Tour operators and all other travel arrangement and reservation services .....	Line item
561600	YES	561600	Investigation and security services.....	Summary
561610	YES	561610	Investigation, guard, and armored car services .....	Line item
561620	YES	561620	Security systems services .....	Line item
561700	YES	561700	Services to buildings and dwellings.....	Summary
561710	YES	561710	Exterminating and pest control services.....	Line item
561730	YES	561730	Landscaping services.....	Line item
5617RR	NO	561720, 40-90	Janitorial and all other services to buildings and dwellings .....	Line item
561900	YES	561900	Other support services .....	Line item
562000	YES	562000	Waste management and remediation services .....	Summary
562100	YES	562100	Waste collection .....	Line item
5622-9	NO	562200-900	Waste treatment and disposal and waste management services .....	Summary
562200	YES	562200	Waste treatment and disposal .....	Line item
562900	YES	562900	Remediation and other waste management services .....	Line item
610000	YES	610000	Educational services, private.....	Summary
611000	YES	611000	Educational services, private.....	Summary
611100	YES	611100	Elementary and secondary schools, private.....	Line item
6112-3	NO	611200-300	Junior colleges, colleges, universities, and professional schools, private.....	Summary
611200	YES	611200	Junior colleges, private.....	Line item
611300	YES	611300	Colleges, universities, and professional schools, private .....	Line item
6114-7	NO	611400-700	Other educational services, private .....	Summary
611400	YES	611400	Business schools and computer and management training, private .....	Line item
611500	YES	611500	Technical and trade schools, private .....	Line item
611600	YES	611600	Other schools and instruction, private .....	Line item
611700	YES	611700	Educational support services, private.....	Line item
620000	YES	620000	Health care and social assistance .....	Summary
621-3	NO	621000-3000	Health care .....	Summary
621000	YES	621000	Ambulatory health care services .....	Summary
6211-3	NO	621100-300	Offices of health practitioners.....	Summary
621100	YES	621100	Offices of physicians .....	Line item
621200	YES	621200	Offices of dentists.....	Line item
621300	YES	621300	Offices of other health practitioners.....	Summary

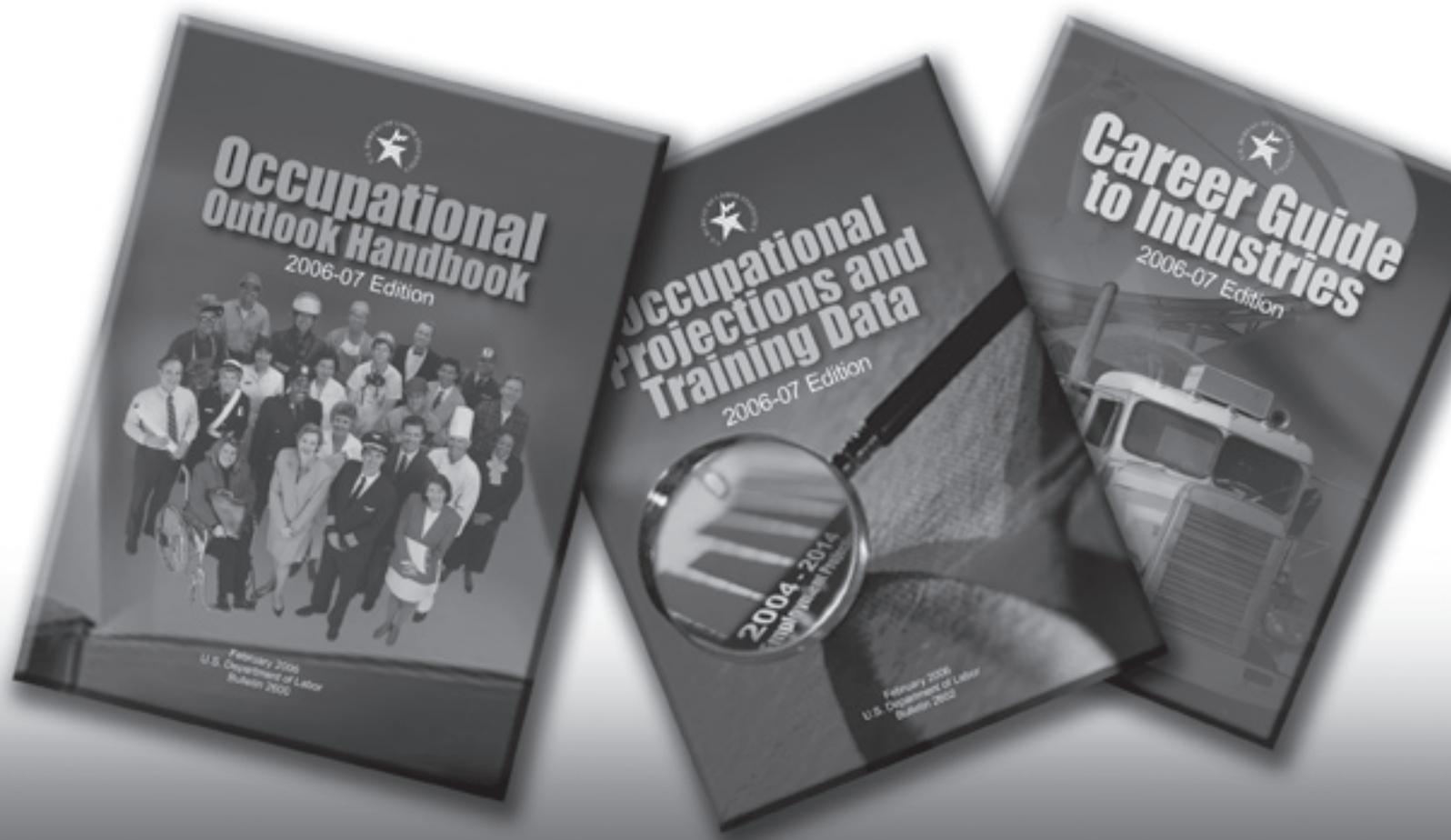
Table III-2. National Employment Matrix industry directory, 2004 — Continued

Matrix code	Valid NAICS code?	2002 NAICS coverage	Matrix industry title	Industry type
621310	YES	621310	Offices of chiropractors .....	Line item
621320	YES	621320	Offices of optometrists .....	Line item
621330	YES	621330	Offices of mental health practitioners (except physicians) .....	Line item
621340	YES	621340	Offices of physical, occupational and speech therapists, and audiologists .....	Line item
621390	YES	621390	Offices of all other health practitioners .....	Line item
621600	YES	621600	Home health care services .....	Line item
621459	NO	621400, 500, 900	Outpatient, laboratory, and other ambulatory care services .....	Summary
621400	YES	621400	Outpatient care centers .....	Summary
621420	YES	621420	Outpatient mental health and substance abuse centers .....	Line item
6214RR	NO	621410, 90	Outpatient care centers, except mental health and substance abuse .....	Line item
621500	YES	621500	Medical and diagnostic laboratories .....	Line item
621900	YES	621900	Other ambulatory health care services .....	Summary
621910	YES	621910	Ambulance services .....	Line item
621990	YES	621990	All other ambulatory health care services .....	Line item
622000	YES	622000	Hospitals, private .....	Summary
622100	YES	622100	General medical and surgical hospitals, private .....	Line item
622200	YES	622200	Psychiatric and substance abuse hospitals, private .....	Line item
622300	YES	622300	Specialty (except psychiatric and substance abuse) hospitals, private .....	Line item
623000	YES	623000	Nursing and residential care facilities .....	Summary
623100	YES	623100	Nursing care facilities .....	Line item
6232-9	NO	623200-900	Residential care facilities .....	Summary
623200	YES	623200	Residential mental retardation, mental health and substance abuse facilities .....	Summary
623210	YES	623210	Residential mental retardation facilities .....	Line item
623220	YES	623220	Residential mental health and substance abuse facilities .....	Line item
623300	YES	623300	Community care facilities for the elderly .....	Line item
623900	YES	623900	Other residential care facilities .....	Line item
624000	YES	624000	Social assistance .....	Summary
6241-3	NO	624100-300	Individual, family, community, and vocational rehabilitation services .....	Summary
624100	YES	624100	Individual and family services .....	Summary
624120	YES	624120	Services for the elderly and persons with disabilities .....	Line item
6241RR	NO	624110, 90	Child, youth, and all other individual and family services .....	Line item
624200	YES	624200	Community food and housing, and emergency and other relief services .....	Line item
624300	YES	624300	Vocational rehabilitation services .....	Line item
624400	YES	624400	Child day care services .....	Line item
710000	YES	710000	Arts, entertainment, and recreation .....	Summary
711000	YES	711000	Performing arts, spectator sports, and related industries .....	Summary
711100	YES	711100	Performing arts companies .....	Line item
711200	YES	711200	Spectator sports .....	Line item
7113-4	NO	711300-400	Promoters of events, and agents and managers .....	Line item
711500	YES	711500	Independent artists, writers, and performers .....	Line item
712000	YES	712000	Museums, historical sites, and similar institutions .....	Summary
712100	YES	712100	Museums, historical sites, and similar institutions .....	Line item
713000	YES	713000	Amusement, gambling, and recreation industries .....	Summary
713100	YES	713100	Amusement parks and arcades .....	Line item
713200	YES	713200	Gambling industries .....	Line item
713900	YES	713900	Other amusement and recreation industries .....	Summary
713940	YES	713940	Fitness and recreational sports centers .....	Line item
7139RR	NO	713910-30, 50-90	Golf courses, country clubs, and all other amusement and recreation industries .....	Line item
720000	YES	720000	Accommodation and food services .....	Summary
721000	YES	721000	Accommodation, including hotels and motels .....	Summary
721113	NO	721100, 721300	Traveler accommodation, including hotels and motels .....	Summary
721120	YES	721120	Casino hotels .....	Line item
7211RR	NO	721110, 721190,	Hotels (except casino), motels, and all other traveler accommodation .....	Line item
		721300	RV (recreational vehicle) parks and recreational camps .....	Line item
721200	YES	721200	RV (recreational vehicle) parks and recreational camps .....	Line item
722000	YES	722000	Food services and drinking places .....	Summary
722100	YES	722100	Full-service restaurants .....	Line item
722200	YES	722200	Limited-service eating places .....	Line item
722300	YES	722300	Special food services .....	Line item
722400	YES	722400	Drinking places (alcoholic beverages) .....	Line item
810000	YES	810000	Other services (except government and private households) .....	Summary
811000	YES	811000	Repair and maintenance .....	Summary
811100	YES	811100	Automotive repair and maintenance .....	Summary
811110	YES	811110	Automotive mechanical and electrical repair and maintenance .....	Line item

Table III-2. National Employment Matrix industry directory, 2004 — Continued

Matrix code	Valid NAICS code?	2002 NAICS coverage	Matrix industry title	Industry type
811120	YES	811120	Automotive body, paint, interior, and glass repair .....	Line item
811190	YES	811190	Other automotive repair and maintenance .....	Line item
811200	YES	811200	Electronic and precision equipment repair and maintenance .....	Line item
811300	YES	811300	Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance .....	Line item
811400	YES	811400	Personal and household goods repair and maintenance .....	Line item
812000	YES	812000	Personal and laundry services .....	Summary
812100	YES	812100	Personal care services .....	Line item
812200	YES	812200	Death care services .....	Line item
812300	YES	812300	Drycleaning and laundry services .....	Line item
812900	YES	812900	Other personal services .....	Line item
813000	YES	813000	Religious, grantmaking, civic, professional, and similar organizations .....	Summary
813100	YES	813100	Religious organizations .....	Line item
8132-3	NO	813200-300	Grantmaking services and social advocacy organizations .....	Summary
813200	YES	813200	Grantmaking and giving services .....	Line item
813300	YES	813300	Social advocacy organizations .....	Line item
8134-9	NO	813400-900	Civic, social, professional, and similar organizations .....	Summary
813400	YES	813400	Civic and social organizations .....	Line item
813900	YES	813900	Business, professional, labor, political, and similar organizations .....	Summary
813930	YES	813930	Labor unions and similar labor organizations .....	Line item
8139RR	NO	813910-20, 40-90	Business associations and all other professional and similar organizations .....	Line item
990000	NO	N.A	Government .....	Summary
910000	NO	N.A	Federal Government .....	Summary
491100	YES	491100	Postal service .....	Line item
919999	NO	N.A	Federal Government, excluding postal service .....	Line item
940000	NO	N.A	State and local government .....	Summary
946110	NO	N.A	State and local government educational services .....	Summary
946220	NO	N.A	State and local government hospitals .....	Summary
949400	NO	N.A	State and local government, excluding education and hospitals .....	Summary
920000	NO	N.A	State government .....	Summary
926110	NO	N.A	State government educational services .....	Line item
926220	NO	N.A	State government hospitals .....	Line item
929200	NO	N.A	State government, excluding education and hospitals .....	Line item
930000	NO	N.A	Local government .....	Summary
936110	NO	N.A	Local government educational services .....	Line item
936220	NO	N.A	Local government hospitals .....	Line item
939300	NO	N.A	Local government, excluding education and hospitals .....	Line item
000530	NO	N.A	Wage and salary employment in agriculture, forestry, fishing, hunting, and private households .....	Summary
110000	YES	110000	Agriculture, forestry, fishing and hunting; primary job .....	Summary
111000	YES	111000	Crop production; primary job .....	Line item
112000	YES	112000	Animal production; primary job .....	Line item
113132	NO	113100-3200	Forestry; primary job .....	Line item
114000	YES	114000	Fishing, hunting and trapping; primary job .....	Line item
115000	YES	115000	Support activities for agriculture and forestry; primary job .....	Line item
814000	YES	814000	Private households; primary and secondary jobs .....	Summary
814100	YES	814100	Private households, primary jobs .....	Line item
814102	NO	N.A	Private households, secondary jobs .....	Line item
000510	NO	N.A	Wage and salary workers with secondary jobs in agriculture, forestry, fishing, and hunting .....	Line item
006700	NO	N.A	Self-employed and unpaid family workers, all jobs .....	Summary
006701	NO	N.A	Total self-employed and unpaid family workers, primary job .....	Summary
006702	NO	N.A	Total self-employed and unpaid family workers, secondary job .....	Summary
000600	NO	N.A	Self-employed workers, all jobs .....	Summary
000601	NO	N.A	Self-employed workers, primary job .....	Line item
000602	NO	N.A	Self-employed workers, secondary job .....	Line item
000700	NO	N.A	Unpaid family workers, all jobs .....	Summary
000701	NO	N.A	Unpaid family workers, primary job .....	Line item
000702	NO	N.A	Unpaid family workers, secondary job .....	Line item

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# Chapter IV. Selected Occupational Data, 2004 and Projected 2014

Every other year, the Bureau of Labor Statistics updates data on current and projected employment, annual average job openings, and other characteristics for all National Employment Matrix occupations. These data are distributed in a variety of formats and publications, ranging from the detailed discussion and tables in the *Monthly Labor Review* (November 2005) to the brief textual and graphic presentations in the *Occupational Outlook Quarterly* (winter edition, 2005–06). In addition, the searchable National Employment Matrix and Occupational Employment, Training, and Earnings Internet sites display the data, which also underlie the job outlook and other information published in the *Occupational Outlook Handbook*.

Table IV–1 displays data on 2004 and projected 2014 employment, employment change, self-employment, annual average job openings, and other characteristics for all National Employment Matrix occupations. Newly developed information on educational attainment discussed in Chapter I accompanies the projections data for the second time. Quartile rankings designate the relative magnitude of data for each detailed occupation. As a result, readers using table IV–1 can obtain specific data about several variables for any occupation and can use the rankings to determine how information for a specific occupation compares with that for other occupations.

In some cases, May 2004 Occupational Employment Statistics (OES) survey employment data for two or more occupations were combined into a single National Employment Matrix occupation because of confidentiality or reliability concerns. In other cases, reliable May 2004 employment data were available, but research required to prepare a projection could not be completed. Base-year employment for these occupations, termed “excluded” occupations, was summed in the corresponding line item occupation. For example, the line item “physicians and surgeons” includes employment data from 8 excluded physician specialties, such as pediatricians. (See table IV–2.)

Employment was projected for each line-item occupation, not for its components. Because employment for excluded occupations was not projected, these occupations do not appear in table IV–1. Information about the number currently employed in an occupation, however, is valuable because it provides a measure of the occupation’s significance in the labor market. Accordingly, table IV–2 displays 2004 employment for excluded occupations, supplementing the information from table IV–1.

## Data presented

Information about each variable’s data source and potential use is presented in this chapter. The OES survey and the Current Population Survey (CPS) provide almost all of the employment data used in developing the 2004–14 projections. (See Chapter III for more details on the structure of the 2004–14 National Employment Matrix.) These surveys also are the sources of other statistical information contained in table IV–1.

Occupational data from the OES survey are not entirely comparable with those from the CPS, because of differences in occupational classification systems and in concepts and methods used in the two surveys.<sup>1</sup> Information about worker characteristics from the CPS is applied to matrix occupations on the basis of the relationship between the 2000 Census of Population occupational classification system and the 2000 Standard Occupational Classification system used by the OES survey.<sup>2</sup> Comparisons based on CPS occupations with fewer than 50,000 workers in 2004 and on some other occupations for which the data appeared unreliable were excluded; data for CPS proxy occupations were substituted. Where possible, larger, closely related CPS occupations were chosen as proxies for the excluded occupations. When a detailed occupation could not be identified, a summary occupational group was used.

Rankings for data categories identify the relative magnitude of variables in terms of the distribution of employment. For example, to rank the projected percent change in employment, data on 2004 employment and on projected 2004–14 percent change in employment were assembled for each occupation, after which each occupation’s employment as a percentage of 2004 total employment was calculated. The

<sup>1</sup> Of the 754 matrix occupations for which projections were developed, 373 had a one-to-one correspondence with a CPS occupation. Combinations of an additional 362 matrix occupations each obtained employment from a single, higher level CPS occupation. In these cases, the characteristics of the higher level CPS occupation were applied to each matrix occupation. The final 19 matrix occupations received data from more than one CPS occupation with the CPS occupation’s employment contribution to the matrix occupation used to weight its impact.

<sup>2</sup> CPS occupational data for 2000 through 2002 were coded with the use of the 1990 Census of Population occupation classification system. BLS had the Bureau of the Census recode 2000, 2001, and 2002 monthly CPS occupational data to the 2000 Census of Population occupational classification system, which is quite comparable to the 2000 Standard Occupational Classification system. Net replacement rates, which were calculated from CPS data based on the 1990 Census of Population occupation classification system, were distributed to the 2000 Census of Population system in accordance with information from the recoded CPS files.

occupations were sorted by employment change in descending order, and the cumulative percentage of 2004 employment for each was determined. Occupations within the group accounting for less than 25 percent of total employment are designated “VH,” for a very high growth rate. Similarly, occupations sorted by descending order of employment change and accounting for 25 percent to 50 percent of employment are labeled “H” (high); 50 percent to 75 percent, “L” (low); and 75 percent to 100 percent, “VL” (very low). Occupations were sorted by other data elements, and rankings were determined in the same manner.

**Employment, 2004 and 2014.** (Source: Bureau of Labor Statistics, National Employment Matrices for 2004 and 2014.) Employment information is a useful starting point for assessing opportunities, because large occupations usually have more openings than small ones have, regardless of growth or replacement rates. The data include jobs in all industries. Wage and salary, self-employed, and unpaid family workers are included.

**Employment change, 2004–14, numeric.** (Source: Bureau of Labor Statistics, National Employment Matrices for 2004 and 2014.) Information on numerical change provides an absolute measure of projected job gains or losses.

**Employment change, 2004–14, percent.** (Source: Bureau of Labor Statistics, National Employment Matrices for 2004 and 2014.) The percent change in employment measures the rate of change of an occupation. A rapidly growing occupation usually indicates favorable prospects for employment. Moreover, the high demand for workers in a rapidly growing occupation improves their chances for advancement and mobility. Modest employment growth in a large occupation can result in many more job openings than does rapid employment growth in a small occupation.

**Percent self-employed, 2004.** (Source: Bureau of Labor Statistics, National Employment Matrix for 2004.) Individuals who are interested in creating and managing their own businesses may find it important to know the percentage of self-employed workers in an occupation. This percentage is calculated from cps data on unincorporated self-employed persons in their primary or secondary job who are included in matrix employment data. The unincorporated self-employed work for earnings or fees in their own businesses and, unlike self-employed persons in businesses that are incorporated, do not receive a wage or salary.

**Job openings due to growth and total replacement needs, 2004–14.** (Source: Bureau of Labor Statistics, this publication.) These data provide the broadest measure of job opportunities and identify the total additional employees needed annually in an occupation. The number of openings due to growth is calculated from data on increases in occupational employment taken from National Employment Matrices for 2004–14. If employment declines, job openings due to growth

are zero. Estimates of total replacement needs encompass the replacement of workers at all experience levels who leave their jobs to work in another occupation or who stop working because of retirement or other reasons. Total replacement needs reflect the normal movements in the labor force, are calculated from 2003–04 cps data, and are described in Chapter VI. Data from cps proxy occupations are used to estimate replacement needs for some matrix occupations.

**Job openings due to growth and net replacement needs, 2004–14.** (Source: Bureau of Labor Statistics, this publication.) These data indicate the number of new workers needed annually in an occupation and, if training is required, measure minimum training needs. The number of openings due to growth is calculated from data on increases in occupational employment from National Employment Matrices for 2004–14. If employment declines, job openings due to growth are zero. Job openings due to net replacement needs typically arise because experienced workers leave the occupation or the labor force. Net replacement needs are calculated from monthly cps data and are described in Chapter VI. Data from cps proxy occupations are used to estimate replacement needs for some matrix occupations.

**Median annual earnings, 2004.** (Source: May 2004 OES survey.) Table IV–1 presents median annual earnings of workers in different occupations.

**Unemployment rate.** (Source: Average of 2002–2004 cps monthly data.<sup>3</sup>) Some occupations are more susceptible to factors that result in unemployment, including seasonality, fluctuations in economic conditions, and individual business failures. A high unemployment rate indicates that individuals in a given occupation are more likely to become unemployed than are those in occupations with a low rate. Data from cps proxy occupations are used to estimate unemployment rates for some matrix occupations.

**Percent part time.** (Source: Average of 2002–2004 cps monthly data.<sup>4</sup>) Persons who prefer part-time work may want to know the proportion of employees in an occupation who work fewer than 35 hours per week. Data from cps proxy occupations are used to estimate the proportion of part-time workers for some matrix occupations.

**Most significant source of postsecondary education or training.** (Source: Bureau of Labor Statistics.) BLS uses 11 categories to describe all types of postsecondary education or training. Occupation analysts assign a single category that best describes the education or training needed by most workers to become fully qualified in a given occupation. While individuals with different levels of education or training can enter most occupations, a single category is assigned to describe the most significant source of postsecondary education

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<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

or training.

The categories can be used as an initial reference for assessing what postsecondary education or training may be preferable. Because qualification generally can be accomplished in several ways, however, the categories should not be viewed as an absolute standard. Reviewing the material on “Training, other qualifications, and advancement” in the *Occupational Outlook Handbook* and the educational attainment cluster data in this chapter can help determine whether alternatives exist. In most occupations, alternatives do exist. For example, a significant number of computer systems analysts have acquired the qualifying skills, but do not have a bachelor’s degree—the postsecondary education category designated for the occupation. Insights such as this are available from the *Handbook*.

On the basis of an analysis of the occupation’s most significant source of postsecondary education or training, occupations are classified into 1 of the 11 categories that follow, according to these principles:

- An occupation is placed into the category that best describes the education or training that most workers need to become fully qualified in that occupation.
- Postsecondary awards, if generally needed for entry into the occupation, take precedence over work-related training, even though additional skills or experience may be needed for a worker to become fully qualified.
- The length of time that an average worker generally needs to become fully qualified 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.

### **Postsecondary awards**

*First professional degree.* Completion of this degree usually requires at least 3 years of full-time academic study beyond a bachelor’s degree. The first professional degree is the minimum preparation required for entry into several professions, including law, medicine, and dentistry.

*Doctoral degree.* Completion of a Ph.D. or other doctoral degree usually requires at least 3 years of full-time academic work beyond the bachelor’s degree.

*Master’s degree.* Completion of this degree usually requires 1 or 2 years of full-time academic study beyond a bachelor’s degree.

*Bachelor’s or higher degree, plus work experience.* Most occupations in this category are management occupations. All require experience in a related nonmanagement position for which a bachelor’s or higher degree is usually required. Jobs usually are filled with experienced staff who are promoted into a management position, such as engineers who advance to engineering manager.

*Bachelor’s degree.* Completion of this degree generally requires at least 4 years, but not more than 5 years, of full-time academic study beyond high school.

*Associate degree.* Completion of this degree usually requires at least 2 years of full-time academic study beyond high school.

*Postsecondary vocational awards.* Certain programs lead to a certificate or other award, but not a degree. Some such programs last only a few weeks, while others may last more than a year. Occupations in this category include some that require only the completion of a training program and some that require individuals to pass a licensing exam after completion of the program before they can work.

### **Work-related training**

*Work experience in a related occupation.* Many occupations requiring work experience are first-line supervisors/managers of service, sales and related, production, or other occupations, or are other types of managers.

*Long-term on-the-job training.* More than 12 months of on-the-job training or combined work experience and formal classroom instruction are needed for workers to develop the skills to become fully qualified. This category includes formal or 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 successfully complete. These programs include fire and police academies and 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 usually are considered to be employed in the occupation. Also included in this category is the development of natural ability—such as that possessed by musicians, athletes, actors, and other entertainers—that must be cultivated over several years, frequently in a nonwork setting.

*Moderate-term on-the-job training.* Skills needed for a worker to become fully qualified can be acquired during 1 to 12 months of combined on-the-job experience and informal training.

*Short-term on-the-job training.* Skills needed for a worker to become fully qualified can be acquired during a short demonstration of job duties or during 1 month or less of on-the-job experience or instruction.

Once again, the categories identify the postsecondary education or training used by most individuals in an occupation to become fully qualified in that occupation. The categories cannot and do not describe all paths and are not intended

to indicate the level of educational attainment required for a person to be hired.

**Educational attainment cluster.** (Source: Bureau of Labor Statistics, this publication.) Six clusters are defined on the basis of the distribution of educational attainment across occupations, as described in Chapter I of this publication. The clusters are as follows:

- HS = High school occupations
- HS/SC = High school/Some college occupations
- HS/SC/C = High school/Some college/College occupations
- SC = Some college
- SC/C = Some college/College occupations
- C = College occupations.

**Percent of workers aged 25 to 44, by educational attainment.** (Source: 2000–04 cps monthly data.<sup>5</sup>) Many occupations have multiple sources of education and training and are difficult to assign to a single category. To provide insight into alternative routes to obtaining entry into an occupation, data drawn from the cps are presented on the percentage of employees in each occupation who are aged 25–44 years and who have a high school degree or less, some college (including, but not limited to, recipients of associate degrees), or at least a bachelor’s degree. Individuals in surveyed households self-report their occupation and highest educational attainment. For a full description of this new analytical product, see Chapter I of this publication.

### Using ranked information

Table IV–1 consolidates 2004 and 2014 projected employment data and provides comparisons of occupational data. The table ranks information about current and projected employment, projected job openings, earnings, unemployment rates, and the proportion of part-time workers. Except for the unemployment and part-time categories, a high ranking indicates a favorable assessment. A high ranking for the unemployment rate is considered undesirable. Unemployment rates in construction occupations, however, are inflated by characteristics of the industry that make comparisons misleading. For example, construction workers typically experience periods of unemployment after completing a project and before starting work on a new one.

The ranking for the part-time category also should not be used routinely in assessing the desirability of employment, because such an assessment depends on the perspective of the user. For example, high school students might consider a large proportion of part-time work desirable, given that they normally prefer not to work full time. A recent college graduate or anyone seeking full-time employment, however, might reach the opposite conclusion.

The data in table IV–1 have many uses. At times, users may want to know how a particular occupation—41-2011, “cashiers, except gaming”, for example—compares with others. The “H” (high) ranking in the table for the increase in the number of jobs and the “VH” (very high) rankings for both categories of job openings point out that many jobs are available, certainly indicating a favorable rating for the occupation. The “VL” (very low) ranking for earnings and the “VH” (very high) ranking for unemployment, however, are unfavorable in comparison with rankings for other occupations, and these characteristics detract from the desirability of employment in the occupation. The table also shows that this occupation requires only short-term on-the-job training.

Some readers might wish to identify occupations with favorable characteristics that jobseekers can pursue through a specific type of training. For example, a student might be interested in a technical occupation, but might not care to obtain a 4-year college degree. In another instance, a planner might wish to ensure that training programs provided by junior colleges in the area are consistent with the needs of the national labor market. To obtain appropriate information, both the student and the planner could examine information on occupations for which the associate degree is the most significant source of education or training.

Although table IV–1 contains a great deal of information that is useful for career guidance, information about occupational comparisons should be used as an aid, not as a sole source of information for making career choices. After using the table to identify occupations with favorable prospects, the reader should obtain additional information from other sources, such as the *Occupational Outlook Handbook*, the *Occupational Outlook Quarterly*, and local sources, if available. Consideration should be given to individual aptitudes and preferences, and alternative sources of training available in the local area should be investigated. The appendix identifies State and local sources of information.

An electronic version of table IV–1 is available on the Internet at: <ftp://ftp.bls.gov/pub/special.requests/ep/optddata>

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<sup>5</sup> Ibid.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004-14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004-14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
<b>00-0000</b>	<b>Total, all occupations .....</b>	<b>145,612</b>	<b>164,540</b>	<b>18,928</b>	<b>-</b>	<b>13.0</b>	<b>-</b>	<b>7.5</b>	<b>26,090</b>	<b>-</b>
<b>11-1300</b>	<b>Management, business, and financial occupations.....</b>	<b>14,987</b>	<b>17,142</b>	<b>2,155</b>	<b>-</b>	<b>14.4</b>	<b>-</b>	<b>17.4</b>	<b>1,797</b>	<b>-</b>
11-0000	Management occupations .....	9,115	10,147	1,032	-	11.3	-	23.5	997	-
11-1000	Top executives .....	2,317	2,692	375	-	16.2	-	3.5	249	-
11-1011	Chief executives .....	444	510	66	L	14.9	H	16.2	38	L
11-1021	General and operations managers .....	1,807	2,115	308	VH	17.0	H	.6	208	H
11-1031	Legislators <sup>1</sup> .....	66	67	1	VL	2.0	VL	.0	3	VL
11-2000	Advertising, marketing, promotions, public relations, and sales managers .....	646	777	131	-	20.3	-	3.7	77	-
11-2011	Advertising and promotions managers .....	64	77	13	VL	20.3	VH	6.7	9	VL
11-2020	Marketing and sales managers .....	525	630	105	-	20.1	-	3.5	63	-
11-2021	Marketing managers .....	188	228	39	L	20.8	VH	3.6	23	VL
11-2022	Sales managers .....	337	403	66	L	19.7	VH	3.5	40	L
11-2031	Public relations managers <sup>1</sup> .....	58	70	12	VL	21.7	VH	1.6	5	VL
11-3000	Operations specialties managers .....	1,561	1,807	246	-	15.8	-	1.8	160	-
11-3011	Administrative services managers .....	268	314	45	L	16.9	H	.2	25	VL
11-3021	Computer and information systems managers .....	280	353	73	L	25.9	VH	1.2	25	VL
11-3031	Financial managers .....	528	606	78	H	14.8	H	3.2	63	L
11-3040	Human resources managers .....	157	189	32	-	20.3	-	1.3	11	-
11-3041	Compensation and benefits managers .....	57	70	12	VL	21.5	VH	1.2	4	VL
11-3042	Training and development managers .....	37	47	10	VL	25.9	VH	1.3	3	VL
11-3049	Human resources managers, all other .....	62	72	10	VL	15.9	H	1.3	4	VL
11-3051	Industrial production managers .....	160	162	1	VL	.8	VL	1.7	13	VL
11-3061	Purchasing managers .....	75	80	5	VL	7.0	VL	.3	8	VL
11-3071	Transportation, storage, and distribution managers .....	92	104	12	VL	12.7	L	2.8	15	VL
11-9000	Other management occupations .....	4,591	4,870	280	-	6.1	-	45.7	511	-
11-9010	Agricultural managers .....	1,285	1,139	-146	-	-11.3	-	79.9	116	-
11-9011	Farm, ranch, and other agricultural managers .....	220	229	9	VL	4.0	VL	.0	20	VL
11-9012	Farmers and ranchers .....	1,065	910	-155	VL	-14.5	VL	10.0	96	L
11-9021	Construction managers .....	431	475	45	L	10.4	L	54.2	28	VL
11-9030	Education administrators .....	442	515	73	-	16.6	-	3.4	57	-
11-9031	Education administrators, preschool and child care center/program .....	58	75	16	VL	27.9	VH	3.2	9	VL
11-9032	Education administrators, elementary and secondary school .....	225	249	24	L	10.4	L	3.6	27	VL
11-9033	Education administrators, postsecondary .....	132	160	28	L	21.3	VH	3.3	18	VL
11-9039	Education administrators, all other .....	26	31	5	VL	20.3	VH	3.3	4	VL
11-9041	Engineering managers <sup>1</sup> .....	190	215	25	L	13.0	L	.5	15	VL
11-9051	Food service managers .....	371	414	43	L	11.5	L	40.5	61	L
11-9061	Funeral directors .....	30	32	2	VL	6.7	VL	19.7	3	VL
11-9071	Gaming managers <sup>1,2</sup> .....	4	5	1	VL	22.6	VH	4.0	1	VL
11-9081	Lodging managers .....	58	68	10	VL	16.6	H	40.2	10	VL
11-9111	Medical and health services managers .....	248	305	57	L	22.8	VH	5.7	33	L
11-9121	Natural sciences managers <sup>1,2</sup> .....	42	48	6	VL	13.6	L	.0	5	VL
11-9131	Postmasters and mail superintendents <sup>1</sup> .....	26	26	0	VL	.0	VL	.0	2	VL
11-9141	Property, real estate, and community association managers .....	361	416	55	L	15.3	H	48.2	58	L
11-9151	Social and community service managers .....	134	169	34	L	25.5	VH	2.2	17	VL
11-9199	Managers, all other .....	969	1,045	76	L	7.8	L	59.0	105	L
13-0000	Business and financial operations occupations .....	5,873	6,996	1,123	-	19.1	-	8.6	800	-
13-1000	Business operations specialists .....	3,375	4,054	679	-	20.1	-	6.3	494	-
13-1011	Agents and business managers of artists, performers, and athletes .....	21	23	2	VL	11.8	L	39.3	2	VL
13-1020	Buyers and purchasing agents .....	445	482	36	-	8.1	-	6.3	41	-

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
		Dollars	Rank					High school or less	Some college	Bachelor's or higher	
Number	Rank										
5,468	-	-	-	-	-	-	-	-	-	-	00-0000
492	-	-	-	-	-	-	-	-	-	-	11-1300
276	-	-	-	-	-	-	-	-	-	-	11-0000
81	-	-	-	-	-	-	-	-	-	-	11-1000
15	L	140,350	VH	VL	VL	Bachelor's plus experience <sup>7</sup>	SC/C	13.2	20.2	66.5	11-1011
65	VH	77,420	VH	VL	VL	Bachelor's plus experience <sup>7</sup>	HS/SC/C	20.9	31.0	48.1	11-1021
1	VL	16,190	VL	VL	VL	Bachelor's plus experience <sup>7</sup>	C	.6	1.5	97.9	11-1031
25	-	-	-	-	-	-	-	-	-	-	11-2000
2	VL	63,610	VH	H	VL	Bachelor's plus experience <sup>7</sup>	C	7.1	15.3	77.6	11-2011
20	-	-	-	-	-	-	-	-	-	-	11-2020
7	L	87,640	VH	L	VL	Bachelor's plus experience <sup>7</sup>	SC/C	11.9	22.3	65.7	11-2021
13	L	84,220	VH	L	VL	Bachelor's plus experience <sup>7</sup>	SC/C	11.9	22.3	65.7	11-2022
2	VL	70,000	VH	H	VL	Bachelor's plus experience <sup>7</sup>	C	10.2	18.9	70.9	11-2031
52	-	-	-	-	-	-	-	-	-	-	11-3000
10	L	60,290	VH	VL	VL	Bachelor's plus experience <sup>7</sup>	SC/C	2.0	39.1	41.0	11-3011
12	L	92,570	VH	L	VL	Bachelor's plus experience <sup>7</sup>	SC/C	6.8	23.3	7.0	11-3021
15	L	81,880	VH	VL	VL	Bachelor's plus experience <sup>7</sup>	SC/C	14.3	26.4	59.2	11-3031
6	-	72,720	VH	-	-	-	-	-	-	-	11-3040
2	VL	66,530	VH	L	VL	Bachelor's plus experience <sup>7</sup>	SC/C	15.5	23.7	60.8	11-3041
2	VL	67,460	VH	L	VL	Bachelor's plus experience <sup>7</sup>	SC/C	15.5	23.7	60.8	11-3042
2	VL	81,810	VH	L	VL	Bachelor's plus experience <sup>7</sup>	SC/C	15.5	23.7	60.8	11-3049
3	VL	73,000	VH	L	VL	Work experience in a related occupation	HS/SC/C	28.1	27.0	44.9	11-3051
2	VL	72,450	VH	VL	VL	Bachelor's plus experience <sup>7</sup>	SC/C	13.4	28.7	57.9	11-3061
3	VL	66,600	VH	L	VL	Work experience in a related occupation	HS/SC/C	46.8	29.6	23.6	11-3071
118	-	-	-	-	-	-	-	-	-	-	11-9000
11	-	-	-	-	-	-	-	-	-	-	11-9010
5	VL	50,700	VH	VL	L	Bachelor's plus experience <sup>7</sup>	HS/SC	50.4	29.7	19.9	11-9011
6	VL	40,440	H	VL	H	Long-term on-the-job training	HS/SC	55.4	28.9	15.7	11-9012
12	L	69,870	VH	VL	VL	Bachelor's degree	HS/SC/C	40.9	29.5	29.6	11-9021
18	-	-	-	-	-	-	-	-	-	-	11-9030
3	VL	35,730	H	VL	L	Bachelor's plus experience <sup>7</sup>	C	9.1	17.0	73.9	11-9031
8	L	74,190	VH	VL	L	Bachelor's plus experience <sup>7</sup>	C	9.1	17.0	73.9	11-9032
6	VL	68,340	VH	VL	L	Bachelor's plus experience <sup>7</sup>	C	9.1	17.0	73.9	11-9033
1	VL	60,250	VH	VL	L	Bachelor's plus experience <sup>7</sup>	C	9.1	17.0	73.9	11-9039
6	VL	97,630	VH	VL	VL	Bachelor's plus experience <sup>7</sup>	C	7.9	7.8	84.3	11-9041
10	L	39,610	H	L	L	Work experience in a related occupation	HS/SC/C	39.8	33.9	26.3	11-9051
1	VL	45,960	VH	VL	L	Associate degree	SC/C	7.4	57.9	34.7	11-9061
0	VL	58,580	VH	L	VL	Work experience in a related occupation	HS/SC	40.1	42.3	17.7	11-9071
2	VL	37,660	H	L	L	Work experience in a related occupation	HS/SC/C	26.2	28.2	45.6	11-9081
10	L	67,430	VH	VL	VL	Bachelor's plus experience <sup>7</sup>	SC/C	12.7	27.4	59.9	11-9111
1	VL	88,660	VH	VL	VL	Bachelor's plus experience <sup>7</sup>	C	6.0	3.8	90.2	11-9121
0	VL	50,580	VH	VL	VL	Work experience in a related occupation	HS/SC/C	20.9	31.0	48.1	11-9131
12	L	39,980	H	VL	H	Bachelor's degree	HS/SC/C	3.0	33.7	36.3	11-9141
6	VL	46,810	VH	L	L	Bachelor's degree	C	12.9	17.9	69.2	11-9151
26	H	77,290	VH	VL	L	Work experience in a related occupation	HS/SC/C	23.3	26.1	50.6	11-9199
216	-	-	-	-	-	-	-	-	-	-	13-0000
128	-	-	-	-	-	-	-	-	-	-	13-1000
1	VL	55,080	VH	H	H	Bachelor's plus experience <sup>7</sup>	HS/SC/C	20.4	18.1	61.5	13-1011
15	-	-	-	-	-	-	-	-	-	-	13-1020

See footnotes at end of table.

**Table IV–1. Occupational employment and job openings data, 2004–14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004–14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004–14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
13-1021	Purchasing agents and buyers, farm products <sup>1,3</sup> .....	16	17	1	VL	7.0	VL	8.5	2	VL
13-1022	Wholesale and retail buyers, except farm products .....	156	169	13	VL	8.4	L	10.9	20	VL
13-1023	Purchasing agents, except wholesale, retail, and farm products .....	273	296	22	L	8.1	L	3.5	19	VL
13-1030	Claims adjusters, appraisers, examiners, and investigators.....	263	303	40	–	15.1	–	2.6	30	–
13-1031	Claims adjusters, examiners, and investigators.....	250	288	38	L	15.1	H	2.5	28	VL
13-1032	Insurance appraisers, auto damage .....	13	15	2	VL	16.6	H	2.9	2	VL
13-1041	Compliance officers, except agriculture, construction, health and safety, and transportation.....	177	197	21	L	11.6	L	.0	17	VL
13-1051	Cost estimators .....	198	234	36	L	18.2	H	2.2	15	VL
13-1061	Emergency management specialists.....	10	13	2	VL	22.8	VH	.0	2	VL
13-1070	Human resources, training, and labor relations specialists.....	663	823	161	–	24.2	–	2.4	103	–
13-1071	Employment, recruitment, and placement specialists .....	182	237	55	L	30.5	VH	2.5	30	L
13-1072	Compensation, benefits, and job analysis specialists .....	99	119	20	L	20.4	VH	2.7	15	VL
13-1073	Training and development specialists .....	216	261	45	L	20.8	VH	2.8	32	L
13-1079	Human resources, training, and labor relations specialists, all other .....	166	206	40	L	24.1	VH	1.8	26	VL
13-1081	Logisticians <sup>1</sup> .....	53	60	7	VL	13.2	L	.7	7	VL
13-1111	Management analysts .....	605	727	122	H	20.1	VH	24.7	82	L
13-1121	Meeting and convention planners .....	43	52	10	VL	22.2	VH	5.1	4	VL
13-1199	Business operation specialists, all other .....	897	1,139	242	VH	27.0	VH	.0	193	H
13-2000	Financial specialists .....	2,497	2,941	444	–	17.8	–	11.7	306	–
13-2011	Accountants and auditors .....	1,176	1,440	264	VH	22.4	VH	10.9	157	H
13-2021	Appraisers and assessors of real estate .....	102	125	23	L	22.8	VH	37.2	9	VL
13-2031	Budget analysts .....	58	65	8	VL	13.5	L	2.0	6	VL
13-2041	Credit analysts.....	68	70	2	VL	3.6	VL	.0	3	VL
13-2050	Financial analysts and advisors .....	456	539	83	–	18.2	–	17.4	58	–
13-2051	Financial analysts.....	197	231	34	L	17.3	H	6.7	28	VL
13-2052	Personal financial advisors.....	158	199	41	L	25.9	VH	38.9	17	VL
13-2053	Insurance underwriters.....	101	109	8	VL	8.0	L	1.0	13	VL
13-2061	Financial examiners <sup>1,3</sup> .....	24	27	2	VL	9.5	L	.0	3	VL
13-2070	Loan counselors and officers .....	325	355	30	–	9.2	–	2.7	43	–
13-2071	Loan counselors .....	34	40	6	VL	17.7	H	2.8	5	VL
13-2072	Loan officers.....	291	315	24	L	8.3	L	2.7	38	L
13-2080	Tax examiners, collectors, preparers, and revenue agents .....	162	175	13	–	8.1	–	19.3	14	–
13-2081	Tax examiners, collectors, and revenue agents .....	76	80	4	VL	5.1	VL	.0	4	VL
13-2082	Tax preparers.....	86	95	9	VL	10.6	L	35.6	11	VL
13-2099	Financial specialists, all other.....	127	145	18	VL	14.4	H	1.0	14	VL
<b>15-2900</b>	<b>Professional and related occupations .....</b>	<b>28,544</b>	<b>34,590</b>	<b>6,046</b>	<b>–</b>	<b>21.2</b>	<b>–</b>	<b>6.2</b>	<b>3,674</b>	<b>–</b>
15-1000	Computer specialists .....	3,046	4,003	957	–	31.4	–	4.3	365	–
15-1011	Computer and information scientists, research .....	22	28	6	VL	25.6	VH	5.1	2	VL
15-1021	Computer programmers .....	455	464	9	VL	2.0	VL	4.5	28	VL
15-1030	Computer software engineers .....	800	1,169	369	–	46.1	–	2.4	91	–
15-1031	Computer software engineers, applications .....	460	682	222	VH	48.4	VH	2.4	54	L
15-1032	Computer software engineers, systems software .....	340	486	146	H	43.0	VH	2.4	37	L
15-1041	Computer support specialists .....	518	638	119	H	23.0	VH	.9	87	L
15-1051	Computer systems analysts .....	487	640	153	H	31.4	VH	5.0	56	L
15-1061	Database administrators .....	104	144	40	L	38.2	VH	.5	9	VL
15-1071	Network and computer systems administrators .....	278	385	107	H	38.4	VH	.6	34	L

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
		Dollars	Rank					High school or less	Some college	Bachelor's or higher	
Number	Rank										
1	VL	43,720	VH	VL	VL	Work experience in a related occupation	HS/SC/C	43.2	26.6	30.3	13-1021
5	VL	42,230	H	L	H	Work experience in a related occupation	HS/SC/C	31.3	29.6	39.1	13-1022
9	L	47,680	VH	H	VL	Work experience in a related occupation	HS/SC/C	23.7	31.5	44.8	13-1023
7	-	-	-	-	-	-	-	-	-	-	13-1030
7	VL	44,220	VH	VL	VL	Long-term on-the-job training	HS/SC/C	24.4	29.7	45.9	13-1031
0	VL	45,330	VH	VL	VL	Long-term on-the-job training	HS/SC/C	24.4	29.7	45.9	13-1032
6	VL	47,390	VH	VL	VL	Long-term on-the-job training	SC/C	11.7	29.9	58.4	13-1041
8	L	49,940	VH	VL	VL	Work experience in a related occupation	HS/SC/C	27.5	39.7	32.8	13-1051
0	VL	45,390	VH	L	L	Work experience in a related occupation	SC/C	2.0	37.9	42.1	13-1061
26	-	-	-	-	-	-	-	-	-	-	13-1070
8	L	41,190	H	L	L	Bachelor's degree	SC/C	15.9	26.6	57.5	13-1071
4	VL	47,490	VH	L	L	Bachelor's degree	SC/C	15.9	26.6	57.5	13-1072
8	L	44,570	VH	L	L	Bachelor's degree	SC/C	15.9	26.6	57.5	13-1073
7	VL	47,530	VH	L	L	Bachelor's degree	SC/C	15.9	26.6	57.5	13-1079
2	VL	57,110	VH	VL	L	Bachelor's degree	SC/C	14.6	33.1	52.3	13-1081
20	L	63,450	VH	L	L	Bachelor's plus experience <sup>7</sup>	C	7.6	16.1	76.3	13-1111
2	VL	39,620	H	H	L	Bachelor's degree	SC/C	8.8	28.5	62.6	13-1121
40	H	53,460	VH	L	L	Bachelor's degree	SC/C	2.0	37.9	42.1	13-1199
89	-	-	-	-	-	-	-	-	-	-	13-2000
49	H	50,770	VH	VL	L	Bachelor's degree	C	6.8	17.7	75.5	13-2011
4	VL	43,390	H	VL	L	Postsecondary vocational award	SC/C	17.2	39.1	43.7	13-2021
2	VL	56,040	VH	L	VL	Bachelor's degree	SC/C	4.8	20.2	75.0	13-2031
1	VL	47,260	VH	L	VL	Bachelor's degree	SC/C	11.4	23.3	65.3	13-2041
15	-	-	-	-	-	-	-	-	-	-	13-2050
6	VL	61,910	VH	VL	L	Bachelor's degree	C	4.6	10.1	85.4	13-2051
6	VL	62,700	VH	VL	L	Bachelor's degree	C	5.4	12.8	81.7	13-2052
3	VL	48,550	VH	VL	VL	Bachelor's degree	SC/C	14.0	24.5	61.5	13-2053
1	VL	60,310	VH	VL	L	Bachelor's degree	C	11.0	10.4	78.7	13-2061
8	-	-	-	-	-	-	-	-	-	-	13-2070
1	VL	33,970	H	VL	VL	Bachelor's degree	SC/C	17.6	32.0	50.5	13-2071
7	VL	48,830	VH	VL	VL	Bachelor's degree	SC/C	17.6	32.0	50.5	13-2072
4	-	-	-	-	-	-	-	-	-	-	13-2080
2	VL	43,490	H	L	VL	Bachelor's degree	HS/SC/C	20.1	30.2	49.7	13-2081
2	VL	27,730	L	VH	H	Moderate-term on-the-job training	HS/SC/C	22.7	27.5	49.7	13-2082
4	VL	49,540	VH	VL	L	Bachelor's degree	HS/SC/C	23.3	29.7	47.0	13-2099
<b>1,152</b>	-	-	-	-	-	-	-	-	-	-	<b>15-2900</b>
135	-	-	-	-	-	-	-	-	-	-	15-1000
1	VL	85,190	VH	L	VL	Doctoral degree	SC/C	9.4	24.8	65.8	15-1011
12	L	62,890	VH	H	VL	Bachelor's degree	SC/C	6.2	21.6	72.2	15-1021
45	-	-	-	-	-	-	-	-	-	-	15-1030
27	H	74,980	VH	L	VL	Bachelor's degree	C	3.9	13.0	83.2	15-1031
18	L	79,740	VH	L	VL	Bachelor's degree	C	3.9	13.0	83.2	15-1032
18	L	40,430	H	H	L	Associate degree	SC/C	16.5	42.4	41.1	15-1041
21	L	66,460	VH	L	VL	Bachelor's degree	SC/C	9.4	24.8	65.8	15-1051
5	VL	60,650	VH	L	VL	Bachelor's degree	C	9.1	18.6	72.4	15-1061
14	L	58,190	VH	L	VL	Bachelor's degree	SC/C	13.4	35.2	51.4	15-1071

See footnotes at end of table.

**Table IV–1. Occupational employment and job openings data, 2004–14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004–14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004–14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
15-1081	Network systems and data communications analysts.....	231	357	126	H	54.6	VH	19.9	43	L
15-1099	Computer specialists, all other.....	149	177	28	L	19.0	VH	6.7	15	VL
15-2000	Mathematical science occupations.....	107	117	10	–	9.7	–	1.2	14	–
15-2011	Actuaries <sup>1</sup> .....	18	22	4	VL	23.2	VH	.0	3	VL
15-2021	Mathematicians <sup>1,5</sup> .....	3	3	0	VL	-1.3	VL	.0	0	VL
15-2031	Operations research analysts.....	58	62	5	VL	8.4	L	1.2	7	VL
15-2041	Statisticians <sup>1</sup> .....	19	20	1	VL	4.6	VL	3.6	2	VL
15-2090	Miscellaneous mathematical science occupations.....	10	11	1	–	5.7	–	.0	1	–
15-2091	Mathematical technicians <sup>1,5</sup> .....	2	2	0	VL	3.4	VL	.0	0	VL
15-2099	Mathematical scientists, all other <sup>1,5</sup> .....	9	9	1	VL	6.2	VL	.0	1	VL
17-0000	Architecture and engineering occupations.....	2,520	2,835	315	–	12.5	–	3.7	214	–
17-1000	Architects, surveyors, and cartographers.....	220	258	38	–	17.1	–	15.6	14	–
17-1010	Architects, except naval.....	154	181	27	–	17.7	–	20.7	8	–
17-1011	Architects, except landscape and naval.....	129	151	22	L	17.3	H	20.1	7	VL
17-1012	Landscape architects.....	25	30	5	VL	19.4	VH	23.7	1	VL
17-1020	Surveyors, cartographers, and photogrammetrists.....	67	77	11	–	15.8	–	3.6	5	–
17-1021	Cartographers and photogrammetrists <sup>1</sup> .....	11	12	2	VL	15.2	H	2.9	1	VL
17-1022	Surveyors <sup>1</sup> .....	56	65	9	VL	15.9	H	3.7	4	VL
17-2000	Engineers.....	1,449	1,643	195	–	13.4	–	2.7	114	–
17-2011	Aerospace engineers.....	76	82	6	VL	8.3	L	.0	6	VL
17-2021	Agricultural engineers <sup>1,5</sup> .....	3	4	0	VL	12.0	L	.0	0	VL
17-2031	Biomedical engineers <sup>1,3</sup> .....	10	13	3	VL	30.7	VH	7.2	1	VL
17-2041	Chemical engineers.....	31	34	3	VL	10.6	L	.0	3	VL
17-2051	Civil engineers.....	237	276	39	L	16.5	H	4.9	19	VL
17-2061	Computer hardware engineers <sup>1</sup> .....	77	84	8	VL	10.1	L	.8	5	VL
17-2070	Electrical and electronics engineers.....	299	331	32	–	10.8	–	3.3	23	–
17-2071	Electrical engineers.....	156	174	18	VL	11.8	L	3.3	12	VL
17-2072	Electronics engineers, except computer.....	143	157	14	VL	9.7	L	3.2	11	VL
17-2081	Environmental engineers.....	49	64	15	VL	3.0	VH	.3	5	VL
17-2110	Industrial engineers, including health and safety.....	203	235	32	–	15.7	–	.4	15	–
17-2111	Health and safety engineers, except mining safety engineers and inspectors.....	27	30	4	VL	13.4	L	.5	2	VL
17-2112	Industrial engineers.....	177	205	28	L	16.0	H	.4	13	VL
17-2121	Marine engineers and naval architects <sup>1,3</sup> .....	7	7	1	VL	8.5	L	.0	0	VL
17-2131	Materials engineers <sup>1</sup> .....	21	24	3	VL	12.2	L	.0	2	VL
17-2141	Mechanical engineers.....	226	251	25	L	11.1	L	2.5	11	VL
17-2151	Mining and geological engineers, including mining safety engineers <sup>1,5</sup> .....	5	5	0	VL	-1.5	VL	.0	0	VL
17-2161	Nuclear engineers <sup>3</sup> .....	17	19	1	VL	7.3	VL	.0	1	VL
17-2171	Petroleum engineers <sup>1,2</sup> .....	16	16	0	VL	-.1	VL	7.2	1	VL
17-2199	Engineers, all other.....	172	198	27	L	15.4	H	4.7	19	VL
17-3000	Drafters, engineering, and mapping technicians.....	851	933	82	–	9.7	–	2.2	86	–
17-3010	Drafters.....	254	267	13	–	5.3	–	5.7	22	–
17-3011	Architectural and civil drafters.....	110	115	5	VL	4.6	VL	6.1	9	VL
17-3012	Electrical and electronics drafters.....	38	38	0	VL	1.2	VL	6.4	3	VL
17-3013	Mechanical drafters.....	82	87	4	VL	5.5	VL	5.5	7	VL
17-3019	Drafters, all other.....	24	27	3	VL	14.0	L	3.3	2	VL
17-3020	Engineering technicians, except drafters.....	532	595	63	–	11.8	–	.3	56	–
17-3021	Aerospace engineering and operations technicians.....	10	10	1	VL	8.5	L	.5	1	VL
17-3022	Civil engineering technicians.....	94	107	13	VL	14.1	H	.3	10	VL
17-3023	Electrical and electronic engineering technicians.....	182	199	18	VL	9.8	L	.4	18	VL
17-3024	Electro-mechanical technicians.....	19	21	2	VL	9.7	L	.5	2	VL
17-3025	Environmental engineering technicians.....	20	25	5	VL	24.4	VH	.3	2	VL
17-3026	Industrial engineering technicians.....	69	76	7	VL	10.5	L	.3	7	VL

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
		Dollars	Rank					High school or less	Some college	Bachelor's or higher	
Number	Rank										
15	L	60,600	VH	H	L	Bachelor's degree	SC/C	9.4	30.9	59.7	15-1081
5	VL	59,480	VH	L	VL	Associate degree	SC/C	9.4	24.8	65.8	15-1099
4	-	-	-	-	-	-	-	-	-	-	15-2000
1	VL	76,340	VH	VL	VL	Bachelor's plus experience <sup>7</sup>	C	2.8	5.1	92.1	15-2011
0	VL	81,240	VH	VL	VL	Doctoral degree	C	6.7	18.1	75.1	15-2021
2	VL	60,190	VH	VL	VL	Master's degree	SC/C	8.0	26.9	65.1	15-2031
1	VL	58,620	VH	VL	L	Master's degree	C	7.2	3.5	89.3	15-2041
0	-	59,610	VH	-	-	-	-	-	-	-	15-2090
0	VL	38,460	H	VL	VL	Master's degree	C	6.7	18.1	75.1	15-2091
0	VL	62,360	VH	VL	VL	Master's degree	C	6.7	18.1	75.1	15-2099
88	-	-	-	-	-	-	-	-	-	-	17-0000
8	-	-	-	-	-	-	-	-	-	-	17-1000
4	-	-	-	-	-	-	-	-	-	-	17-1010
4	VL	60,300	VH	VL	VL	Bachelor's degree	C	3.4	10.8	85.8	17-1011
1	VL	53,120	VH	VL	VL	Bachelor's degree	C	3.4	10.8	85.8	17-1012
3	-	-	-	-	-	-	-	-	-	-	17-1020
1	VL	46,080	VH	VL	VL	Bachelor's degree	C	5.9	12.2	81.8	17-1021
3	VL	42,980	H	VL	VL	Bachelor's degree	C	5.9	12.2	81.8	17-1022
51	-	-	-	-	-	-	-	-	-	-	17-2000
2	VL	79,100	VH	VL	VL	Bachelor's degree	C	5.6	10.5	83.9	17-2011
0	VL	56,520	VH	VL	L	Bachelor's degree	C	4.8	14.5	80.7	17-2021
0	VL	67,690	VH	VL	VL	Bachelor's degree	SC/C	7.6	32.8	59.6	17-2031
1	VL	76,770	VH	VL	VL	Bachelor's degree	C	1.7	6.0	92.3	17-2041
8	L	64,230	VH	VL	VL	Bachelor's degree	C	3.4	9.2	87.5	17-2051
2	VL	81,150	VH	H	VL	Bachelor's degree	SC/C	6.0	25.1	68.9	17-2061
9	-	-	-	-	-	-	-	-	-	-	17-2070
5	VL	71,610	VH	L	VL	Bachelor's degree	C	3.7	13.3	83.0	17-2071
4	VL	75,770	VH	L	VL	Bachelor's degree	C	3.7	13.3	83.0	17-2072
2	VL	66,480	VH	VL	VL	Bachelor's degree	C	7.2	5.4	87.4	17-2081
8	-	-	-	-	-	-	-	-	-	-	17-2110
1	VL	63,730	VH	L	VL	Bachelor's degree	SC/C	8.7	21.8	69.6	17-2111
7	VL	65,020	VH	L	VL	Bachelor's degree	SC/C	8.7	21.8	69.6	17-2112
0	VL	72,040	VH	VL	VL	Bachelor's degree	SC/C	14.0	25.7	60.3	17-2121
1	VL	67,110	VH	VL	VL	Bachelor's degree	SC/C	8.5	23.4	68.1	17-2131
9	L	66,320	VH	VL	VL	Bachelor's degree	C	4.1	15.7	80.2	17-2141
0	VL	64,690	VH	VL	VL	Bachelor's degree	C	4.8	14.5	80.7	17-2151
1	VL	84,880	VH	VL	VL	Bachelor's degree	C	3.3	7.6	89.1	17-2161
1	VL	88,500	VH	VL	VL	Bachelor's degree	C	5.7	12.3	82.0	17-2171
6	VL	74,430	VH	L	VL	Bachelor's degree	C	3.9	15.5	80.5	17-2199
29	-	-	-	-	-	-	-	-	-	-	17-3000
8	-	-	-	-	-	-	-	-	-	-	17-3010
4	VL	39,190	H	H	VL	Postsecondary vocational award	SC/C	16.3	62.1	21.6	17-3011
1	VL	43,180	H	H	VL	Postsecondary vocational award	SC/C	16.3	62.1	21.6	17-3012
3	VL	43,000	H	H	VL	Postsecondary vocational award	SC/C	16.3	62.1	21.6	17-3013
1	VL	41,860	H	H	VL	Postsecondary vocational award	SC/C	16.3	62.1	21.6	17-3019
18	-	-	-	-	-	-	-	-	-	-	17-3020
0	VL	52,500	VH	L	VL	Associate degree	HS/SC	28.2	54.0	17.8	17-3021
3	VL	38,480	H	L	VL	Associate degree	HS/SC	28.2	54.0	17.8	17-3022
6	VL	46,310	VH	L	VL	Associate degree	HS/SC	28.2	54.0	17.8	17-3023
1	VL	41,440	H	L	VL	Associate degree	HS/SC	28.2	54.0	17.8	17-3024
1	VL	38,550	H	L	VL	Associate degree	HS/SC	28.2	54.0	17.8	17-3025
2	VL	43,590	H	L	VL	Associate degree	HS/SC	28.2	54.0	17.8	17-3026

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004-14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004-14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
17-3027	Mechanical engineering technicians .....	48	54	6	VL	12.3	L	.4	5	VL
17-3029	Engineering technicians, except drafters, all other .....	91	102	11	VL	12.3	L	.2	10	VL
17-3031	Surveying and mapping technicians.....	65	71	6	VL	9.6	L	4.3	9	VL
19-0000	Life, physical, and social science occupations ...	1,316	1,532	216	-	16.4	-	8.6	146	-
19-1000	Life scientists .....	232	280	48	-	20.8	-	6.2	30	-
19-1010	Agricultural and food scientists .....	30	34	4	-	12.8	-	33.0	2	-
19-1011	Animal scientists .....	3	3	0	VL	12.9	L	31.3	0	VL
19-1012	Food scientists and technologists .....	11	12	1	VL	10.9	L	28.8	1	VL
19-1013	Soil and plant Scientists .....	17	19	2	VL	13.9	L	35.9	1	VL
19-1020	Biological scientists .....	77	90	13	-	17.0	-	2.6	7	-
19-1021	Biochemists and biophysicists.....	16	20	3	VL	21.0	VH	2.7	1	VL
19-1022	Microbiologists.....	15	18	3	VL	17.2	H	2.9	1	VL
19-1023	Zoologists and wildlife biologists .....	16	19	2	VL	13.0	L	2.5	1	VL
19-1029	Biological scientists, all other .....	29	34	5	VL	17.0	H	2.6	3	VL
19-1030	Conservation scientists and foresters .....	32	34	2	-	6.5	-	9.1	3	-
19-1031	Conservation scientists <sup>1</sup> .....	19	20	1	VL	6.3	VL	9.0	2	VL
19-1032	Foresters <sup>1</sup> .....	13	14	1	VL	6.7	VL	9.1	1	VL
19-1040	Medical scientists .....	77	103	26	-	33.6	-	.4	16	-
19-1041	Epidemiologists .....	5	6	1	VL	26.2	VH	.4	1	VL
19-1042	Medical scientists, except epidemiologists .....	72	97	25	L	34.1	VH	.4	15	VL
19-1099	Life scientists, all other .....	15	19	3	VL	20.6	VH	.9	3	VL
19-2000	Physical scientists .....	250	281	30	-	12.2	-	2.4	21	-
19-2010	Astronomers and physicists.....	16	17	1	-	7.1	-	.0	1	-
19-2011	Astronomers <sup>1,2</sup> .....	1	1	0	VL	10.6	L	.0	0	VL
19-2012	Physicists <sup>1,2</sup> .....	15	16	1	VL	7.0	VL	.0	1	VL
19-2021	Atmospheric and space scientists <sup>1,2</sup> .....	7	9	1	VL	16.5	H	.0	1	VL
19-2030	Chemists and materials scientists .....	90	96	7	-	7.3	-	.4	6	-
19-2031	Chemists.....	82	88	6	VL	7.3	VL	.4	5	VL
19-2032	Materials scientists .....	8	8	1	VL	8.0	L	.4	0	VL
19-2040	Environmental scientists and geoscientists ..	109	126	17	-	15.9	-	4.4	11	-
19-2041	Environmental scientists and specialists, including health .....	73	86	13	VL	17.1	H	4.2	8	VL
19-2042	Geoscientists, except hydrologists and geographers.....	28	30	2	VL	8.3	L	5.1	2	VL
19-2043	Hydrologists.....	8	11	3	VL	31.6	VH	4.3	1	VL
19-2099	Physical scientists, all other .....	29	33	4	VL	14.6	H	2.7	2	VL
19-3000	Social scientists and related occupations.....	492	580	88	-	17.9	-	17.7	42	-
19-3011	Economists <sup>1</sup> .....	13	13	1	VL	5.6	VL	.0	1	VL
19-3020	Market and survey researchers .....	212	255	43	-	20.2	-	7.2	22	-
19-3021	Market research analysts .....	190	227	37	L	19.6	VH	7.2	20	VL
19-3022	Survey researchers .....	22	28	6	VL	25.9	VH	7.8	3	VL
19-3030	Psychologists .....	179	212	33	-	18.7	-	37.7	11	-
19-3031	Clinical, counseling, and school psychologists .....	167	199	32	L	19.1	VH	38.3	10	VL
19-3032	Industrial-organizational psychologists.....	2	3	0	VL	20.4	VH	37.6	0	VL
19-3039	Psychologists, all other.....	10	11	1	VL	9.9	L	27.4	1	VL
19-3041	Sociologists <sup>1,5</sup> .....	5	5	0	VL	4.7	VL	11.7	0	VL
19-3051	Urban and regional planners <sup>1</sup> .....	32	37	5	VL	15.2	H	.0	3	VL
19-3090	Miscellaneous social scientists and related workers .....	51	57	6	-	11.8	-	6.6	5	-
19-3091	Anthropologists and archeologists.....	5	6	1	VL	17.0	H	3.8	0	VL
19-3092	Geographers .....	1	1	0	VL	6.8	VL	4.2	0	VL
19-3093	Historians .....	3	3	0	VL	4.3	VL	3.6	0	VL
19-3094	Political scientists .....	5	5	0	VL	7.3	VL	4.7	0	VL
19-3099	Social scientists and related workers, all other.....	38	42	5	VL	12.3	L	7.5	3	VL
19-4000	Life, physical, and social science technicians .	342	391	49	-	14.4	-	1.1	54	-
19-4011	Agricultural and food science technicians ....	23	26	3	VL	13.4	L	.0	1	VL
19-4021	Biological technicians .....	64	75	11	VL	17.2	H	.0	8	VL
19-4031	Chemical technicians <sup>1</sup> .....	62	65	3	VL	4.4	VL	.0	7	VL
19-4041	Geological and petroleum technicians <sup>1,2</sup> .....	11	12	1	VL	6.5	VL	1.6	1	VL

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
		Dollars	Rank					High school or less	Some college	Bachelor's or higher	
Number	Rank										
2	VL	43,400	H	L	VL	Associate degree	HS/SC	28.2	54.0	17.8	17-3027
3	VL	49,440	VH	L	VL	Associate degree	HS/SC	28.2	54.0	17.8	17-3029
3	VL	30,380	H	H	L	Moderate-term on-the-job training	HS/SC	46.5	43.0	10.5	17-3031
53	-	-	-	-	-	-	-	-	-	-	19-0000
10	-	-	-	-	-	-	-	-	-	-	19-1000
1	-	50,910	VH	-	-	-	-	-	-	-	19-1010
0	VL	49,920	VH	VL	L	Bachelor's degree	SC/C	16.1	20.4	63.5	19-1011
0	VL	50,840	VH	VL	L	Bachelor's degree	SC/C	16.1	20.4	63.5	19-1012
1	VL	51,200	VH	VL	L	Bachelor's degree	SC/C	16.1	20.4	63.5	19-1013
4	-	-	-	-	-	-	-	-	-	-	19-1020
1	VL	68,950	VH	VL	L	Doctoral degree	C	.7	3.2	96.1	19-1021
1	VL	54,840	VH	VL	L	Doctoral degree	C	.7	3.2	96.1	19-1022
1	VL	50,330	VH	VL	L	Bachelor's degree	C	.7	3.2	96.1	19-1023
1	VL	56,270	VH	VL	L	Bachelor's degree	C	.7	3.2	96.1	19-1029
1	-	-	-	-	-	-	-	-	-	-	19-1030
1	VL	52,480	VH	VL	VL	Bachelor's degree	C	6.2	9.1	84.7	19-1031
0	VL	48,230	VH	VL	VL	Bachelor's degree	C	6.2	9.1	84.7	19-1032
4	-	-	-	-	-	-	-	-	-	-	19-1040
0	VL	54,800	VH	VL	L	Master's degree	C	1.0	1.4	97.6	19-1041
4	VL	61,320	VH	VL	L	Doctoral degree	C	1.0	1.4	97.6	19-1042
1	VL	55,430	VH	VL	L	Bachelor's degree	C	1.0	1.4	97.6	19-1099
9	-	-	-	-	-	-	-	-	-	-	19-2000
1	-	-	-	-	-	-	-	-	-	-	19-2010
0	VL	97,320	VH	H	VL	Doctoral degree	C	2.8	4.8	92.4	19-2011
1	VL	87,450	VH	H	VL	Doctoral degree	C	2.8	4.8	92.4	19-2012
0	VL	70,100	VH	VL	VL	Bachelor's degree	C	.5	2.2	97.3	19-2021
4	-	-	-	-	-	-	-	-	-	-	19-2030
3	VL	56,060	VH	VL	VL	Bachelor's degree	C	3.0	2.6	94.4	19-2031
0	VL	72,390	VH	VL	VL	Bachelor's degree	C	3.0	2.6	94.4	19-2032
4	-	-	-	-	-	-	-	-	-	-	19-2040
3	VL	51,080	VH	VL	VL	Master's degree	C	3.1	3.9	93.0	19-2041
1	VL	68,730	VH	VL	VL	Master's degree	C	3.1	3.9	93.0	19-2042
0	VL	61,510	VH	VL	VL	Master's degree	C	3.1	3.9	93.0	19-2043
1	VL	80,150	VH	VL	VL	Bachelor's degree	C	2.2	1.9	95.9	19-2099
21	-	-	-	-	-	-	-	-	-	-	19-3000
0	VL	72,780	VH	H	VL	Master's degree	C	1.1	5.6	93.3	19-3011
10	-	-	-	-	-	-	-	-	-	-	19-3020
9	L	56,140	VH	L	L	Bachelor's degree	C	6.5	14.7	78.8	19-3021
1	VL	26,490	L	L	L	Bachelor's degree	C	6.5	14.7	78.8	19-3022
7	-	-	-	-	-	-	-	-	-	-	19-3030
7	VL	54,950	VH	VL	H	Doctoral degree	C	.0	.6	99.4	19-3031
0	VL	71,400	VH	VL	H	Master's degree	C	.0	.6	99.4	19-3032
0	VL	71,910	VH	VL	H	Master's degree	C	.0	.6	99.4	19-3039
0	VL	57,870	VH	VL	H	Master's degree	C	3.7	8.2	88.1	19-3041
2	VL	53,450	VH	VL	VL	Master's degree	C	3.4	3.1	93.5	19-3051
2	-	-	-	-	-	-	-	-	-	-	19-3090
0	VL	43,890	VH	VL	H	Master's degree	C	5.0	13.1	81.9	19-3091
0	VL	58,970	VH	VL	H	Master's degree	C	5.0	13.1	81.9	19-3092
0	VL	44,490	VH	VL	H	Master's degree	C	5.0	13.1	81.9	19-3093
0	VL	86,750	VH	VL	H	Master's degree	C	5.0	13.1	81.9	19-3094
1	VL	58,490	VH	VL	H	Master's degree	C	5.0	13.1	81.9	19-3099
13	-	-	-	-	-	-	-	-	-	-	19-4000
1	VL	29,730	H	L	L	Associate degree	HS/SC/C	40.1	3.0	3.0	19-4011
2	VL	33,210	H	H	L	Associate degree	HS/SC/C	31.2	9.5	59.4	19-4021
2	VL	38,170	H	L	VL	Associate degree	HS/SC/C	30.2	42.7	27.1	19-4031
0	VL	40,260	H	H	VL	Associate degree	HS/SC/C	28.4	31.3	40.3	19-4041

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004-14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004-14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
19-4051	Nuclear technicians <sup>1,5</sup> .....	7	8	1	VL	13.7	L	.0	1	VL
19-4061	Social science research assistants .....	18	21	3	VL	17.4	H	1.2	4	VL
19-4090	Other life, physical, and social science technicians .....	157	184	27	-	17.5	-	2.1	32	-
19-4091	Environmental science and protection technicians, including health .....	31	36	5	VL	16.3	H	1.4	6	VL
19-4092	Forensic science technicians .....	10	13	4	VL	36.4	VH	1.5	2	VL
19-4093	Forest and conservation technicians .....	33	35	2	VL	6.6	VL	1.1	6	VL
19-4099	Life, physical, and social science technicians, all other .....	83	100	17	VL	2.0	VH	2.7	18	VL
21-0000	Community and social services occupations.....	2,317	2,800	483	-	20.8	-	2.2	295	-
21-1000	Counselors, social workers, and other community and social service specialists .....	1,755	2,165	410	-	23.4	-	2.7	250	-
21-1010	Counselors .....	601	729	128	-	21.3	-	5.4	83	-
21-1011	Substance abuse and behavioral disorder counselors .....	76	98	22	L	28.7	VH	5.0	11	VL
21-1012	Educational, vocational, and school counselors .....	248	285	37	L	14.8	H	5.8	32	L
21-1013	Marriage and family therapists .....	24	30	6	VL	25.4	VH	5.5	3	VL
21-1014	Mental health counselors .....	96	122	26	L	27.2	VH	5.0	14	VL
21-1015	Rehabilitation counselors .....	131	162	31	L	23.9	VH	5.5	19	VL
21-1019	Counselors, all other .....	25	31	6	VL	23.1	VH	3.1	4	VL
21-1020	Social workers .....	562	686	124	-	22.0	-	2.9	67	-
21-1021	Child, family, and school social workers .....	272	324	52	L	19.0	VH	3.3	31	L
21-1022	Medical and public health social workers .....	110	139	29	L	25.9	VH	3.0	14	VL
21-1023	Mental health and substance abuse social workers .....	116	147	31	L	26.7	VH	2.5	15	VL
21-1029	Social workers, all other .....	64	76	12	VL	19.6	VH	2.0	7	VL
21-1090	Miscellaneous community and social service specialists .....	592	751	159	-	26.8	-	.1	100	-
21-1091	Health educators .....	49	60	11	VL	22.5	VH	.1	8	VL
21-1092	Probation officers and correctional treatment specialists .....	93	105	12	VL	12.8	L	.1	14	VL
21-1093	Social and human service assistants .....	352	456	104	H	29.7	VH	.1	61	L
21-1099	Community and social service specialists, all other .....	98	129	31	L	32.0	VH	.0	17	VL
21-2000	Religious workers .....	562	635	73	-	12.9	-	.2	45	-
21-2011	Clergy .....	422	474	52	L	12.4	L	.3	26	VL
21-2021	Directors, religious activities and education .....	90	107	17	VL	18.5	VH	.0	10	VL
21-2099	Religious workers, all other .....	50	54	4	VL	7.4	VL	.1	9	VL
23-0000	Legal occupations .....	1,220	1,414	194	-	15.9	-	17.0	100	-
23-1000	Lawyers, judges, and related workers .....	783	897	114	-	14.6	-	22.7	42	-
23-1011	Lawyers .....	735	845	110	H	15.0	H	24.1	40	L
23-1020	Judges, magistrates, and other judicial workers .....	47	52	4	-	8.9	-	.0	2	-
23-1021	Administrative law judges, adjudicators, and hearing officers <sup>1</sup> .....	16	17	2	VL	10.1	L	.0	1	VL
23-1022	Arbitrators, mediators, and conciliators <sup>1</sup> .....	5	6	1	VL	15.5	H	.0	0	VL
23-1023	Judges, magistrate judges, and magistrates <sup>1</sup> .....	27	28	2	VL	6.9	VL	.0	1	VL
23-2000	Legal support workers .....	437	517	80	-	18.2	-	7.0	58	-
23-2011	Paralegals and legal assistants .....	224	291	67	L	29.7	VH	4.2	28	VL
23-2090	Miscellaneous legal support workers .....	213	227	13	-	6.1	-	10.6	30	-
23-2091	Court reporters .....	18	21	3	VL	14.8	H	10.9	3	VL
23-2092	Law clerks .....	51	55	4	VL	7.7	VL	11.5	7	VL
23-2093	Title examiners, abstractors, and searchers .....	61	62	1	VL	.9	VL	10.7	8	VL
23-2099	Legal support workers, all other .....	83	89	6	VL	7.1	VL	1.0	12	VL
25-0000	Education, training, and library occupations.....	8,698	10,438	1,740	-	2.0	-	2.8	1,462	-
25-1000	Postsecondary teachers .....	1,628	2,153	524	VH	32.2	VH	.4	329	VH

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
		Dollars	Rank					High school or less	Some college	Bachelor's or higher	
Number	Rank										
0	VL	59,200	VH	L	VL	Associate degree	HS/SC/C	26.2	33.5	40.2	19-4051
1	VL	34,360	H	H	H	Associate degree	HS/SC/C	20.3	32.9	46.7	19-4061
6	-	-	-	-	-	-	-	-	-	-	19-4090
1	VL	35,340	H	H	H	Associate degree	HS/SC/C	20.3	32.9	46.7	19-4091
1	VL	44,010	VH	H	H	Associate degree	HS/SC/C	20.3	32.9	46.7	19-4092
1	VL	27,330	L	H	H	Associate degree	HS/SC/C	20.3	32.9	46.7	19-4093
4	VL	37,840	H	H	H	Associate degree	HS/SC/C	20.3	32.9	46.7	19-4099
93	-	-	-	-	-	-	-	-	-	-	21-0000
75	-	-	-	-	-	-	-	-	-	-	21-1000
26	-	-	-	-	-	-	-	-	-	-	21-1010
4	VL	32,130	H	L	H	Master's degree	C	11.2	16.3	72.5	21-1011
9	L	45,570	VH	L	H	Master's degree	C	11.2	16.3	72.5	21-1012
1	VL	38,980	H	L	H	Master's degree	C	11.2	16.3	72.5	21-1013
5	VL	32,960	H	L	H	Master's degree	C	11.2	16.3	72.5	21-1014
6	VL	27,870	L	L	H	Master's degree	C	11.2	16.3	72.5	21-1015
1	VL	34,990	H	L	H	Master's degree	C	11.2	16.3	72.5	21-1019
22	-	-	-	-	-	-	-	-	-	-	21-1020
10	L	34,820	H	VL	L	Bachelor's degree	C	7.5	16.4	76.0	21-1021
5	VL	40,080	H	VL	L	Bachelor's degree	C	7.5	16.4	76.0	21-1022
5	VL	33,920	H	VL	L	Master's degree	C	7.5	16.4	76.0	21-1023
2	VL	39,440	H	VL	L	Bachelor's degree	C	7.5	16.4	76.0	21-1029
26	-	-	-	-	-	-	-	-	-	-	21-1090
2	VL	38,480	H	L	L	Master's degree	SC/C	14.9	27.9	57.2	21-1091
3	VL	39,600	H	L	L	Bachelor's degree	SC/C	14.9	27.9	57.2	21-1092
17	L	24,270	L	L	L	Moderate-term on-the-job training	SC/C	14.9	27.9	57.2	21-1093
5	VL	32,530	H	L	L	Bachelor's degree	SC/C	14.9	27.9	57.2	21-1099
18	-	-	-	-	-	-	-	-	-	-	21-2000
14	L	36,690	H	VL	L	Master's degree	C	10.6	14.0	75.4	21-2011
3	VL	30,700	H	VL	H	Bachelor's degree	SC/C	6.6	26.0	67.3	21-2021
1	VL	18,740	VL	VL	VH	Bachelor's degree	SC/C	18.3	28.3	53.4	21-2099
34	-	-	-	-	-	-	-	-	-	-	23-0000
21	-	-	-	-	-	-	-	-	-	-	23-1000
20	L	94,930	VH	VL	VL	First professional degree	C	.6	1.5	97.9	23-1011
1	-	-	-	-	-	-	-	-	-	-	23-1020
0	VL	68,930	VH	VL	VL	Bachelor's plus experience <sup>7</sup>	C	.6	1.5	97.9	23-1021
0	VL	54,760	VH	VL	VL	Bachelor's plus experience <sup>7</sup>	C	.6	1.5	97.9	23-1022
1	VL	93,070	VH	VL	VL	Bachelor's plus experience <sup>7</sup>	C	.6	1.5	97.9	23-1023
12	-	-	-	-	-	-	-	-	-	-	23-2000
8	L	39,130	H	L	L	Associate degree	SC/C	15.6	42.3	42.0	23-2011
4	-	-	-	-	-	-	-	-	-	-	23-2090
0	VL	42,920	H	L	L	Postsecondary vocational award	HS/SC/C	22.3	40.8	36.9	23-2091
1	VL	33,990	H	L	L	Bachelor's degree	HS/SC/C	22.3	40.8	36.9	23-2092
1	VL	34,880	H	L	L	Moderate-term on-the-job training	HS/SC/C	22.3	40.8	36.9	23-2093
1	VL	42,150	H	L	L	Bachelor's degree	HS/SC/C	22.3	40.8	36.9	23-2099
356	-	-	-	-	-	-	-	-	-	-	25-0000
89	VH	51,800	VH	VL	VH	Doctoral degree	C	1.7	5.4	92.9	25-1000

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004-14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004-14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
25-2000	Primary, secondary, and special education teachers .....	4,270	5,051	781	-	18.3	-	.3	547	-
25-2010	Preschool and kindergarten teachers.....	601	782	181	-	30.1	-	1.4	105	-
25-2011	Preschool teachers, except special education .....	431	573	143	H	33.1	VH	1.4	77	L
25-2012	Kindergarten teachers, except special education .....	171	209	38	L	22.4	VH	1.5	28	VL
25-2020	Elementary and middle school teachers .....	2,102	2,453	351	-	16.7	-	.0	288	-
25-2021	Elementary school teachers, except special education .....	1,457	1,722	265	VH	18.2	H	.0	203	H
25-2022	Middle school teachers, except special and vocational education .....	628	714	86	H	13.7	L	.0	83	L
25-2023	Vocational education teachers, middle school.....	17	16	0	VL	-9	VL	.0	2	VL
25-2030	Secondary school teachers .....	1,126	1,283	157	-	14.0	-	.0	117	-
25-2031	Secondary school teachers, except special and vocational education .....	1,024	1,172	148	H	14.4	H	.0	107	H
25-2032	Vocational education teachers, secondary school.....	101	110	9	VL	9.1	L	.0	10	VL
25-2040	Special education teachers .....	441	534	92	-	20.9	-	.5	38	-
25-2041	Special education teachers, preschool, kindergarten, and elementary school..	205	253	48	L	23.3	VH	.5	18	VL
25-2042	Special education teachers, middle school	98	118	19	L	19.9	VH	.5	8	VL
25-2043	Special education teachers, secondary school.....	138	163	25	L	17.9	H	.5	11	VL
25-3000	Other teachers and instructors .....	977	1,150	173	-	17.7	-	22.2	270	-
25-3011	Adult literacy, remedial education, and GED teachers and instructors .....	98	113	15	VL	15.6	H	28.6	27	VL
25-3021	Self-enrichment education teachers .....	253	317	64	L	25.3	VH	31.1	74	L
25-3099	Teachers and instructors, all other.....	626	720	93	H	14.9	H	17.2	169	H
25-4000	Librarians, curators, and archivists.....	308	336	28	-	9.1	-	.8	37	-
25-4010	Archivists, curators, and museum technicians .....	27	31	4	-	14.5	-	7.6	4	-
25-4011	Archivists .....	6	7	1	VL	13.4	L	6.5	1	VL
25-4012	Curators.....	10	12	2	VL	15.7	H	6.4	1	VL
25-4013	Museum Technicians and Conservators....	10	12	1	VL	14.1	H	9.4	2	VL
25-4021	Librarians.....	159	167	8	VL	4.9	VL	.0	8	VL
25-4031	Library technicians <sup>2</sup> .....	122	138	16	VL	13.4	L	.2	25	VL
25-9000	Other education, training, and library occupations.....	1,515	1,748	233	-	15.4	-	.6	278	-
25-9011	Audio-visual collections specialists.....	9	11	2	VL	18.6	VH	3.8	1	VL
25-9021	Farm and home management advisors.....	16	17	1	VL	7.7	VL	3.8	2	VL
25-9031	Instructional coordinators .....	117	149	32	L	27.5	VH	3.1	15	VL
25-9041	Teacher assistants.....	1,296	1,478	183	H	14.1	L	.2	252	H
25-9099	Education, training, and library workers, all other.....	77	92	16	VL	20.5	VH	3.2	9	VL
27-0000	Arts, design, entertainment, sports, and media occupations.....	2,515	2,890	375	-	14.9	-	29.1	427	-
27-1000	Art and design occupations .....	780	880	100	-	12.8	-	34.8	117	-
27-1010	Artists and related workers .....	208	234	26	-	12.4	-	57.3	31	-
27-1011	Art directors .....	71	79	8	VL	11.5	L	55.8	10	VL
27-1012	Craft artists .....	6	7	1	VL	10.6	L	32.7	1	VL
27-1013	Fine artists, including painters, sculptors, and illustrators .....	29	32	3	VL	10.2	L	61.9	4	VL
27-1014	Multi-media artists and animators .....	94	107	13	VL	14.1	H	60.8	14	VL
27-1019	Artists and related workers, all other .....	9	9	1	VL	1.0	L	31.7	1	VL
27-1020	Designers .....	572	645	74	-	12.9	-	26.6	86	-
27-1021	Commercial and industrial designers .....	49	55	5	VL	10.8	L	30.1	7	VL
27-1022	Fashion designers .....	17	18	1	VL	8.4	L	26.5	2	VL
27-1023	Floral designers .....	98	108	10	VL	10.3	L	30.6	14	VL
27-1024	Graphic designers .....	228	263	35	L	15.2	H	25.6	35	L
27-1025	Interior designers.....	65	75	10	VL	15.5	H	25.3	10	VL
27-1026	Merchandise displays and window trimmers.....	86	95	9	VL	10.3	L	25.9	13	VL

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
Number	Rank	Dollars	Rank					High school or less	Some college	Bachelor's or higher	
174	-	-	-	-	-	-	-	-	-	-	25-2000
25	-	-	-	-	-	-	-	-	-	-	25-2010
19	L	20,980	L	VL	H	Postsecondary vocational award	HS/SC/C	21.0	31.0	48.0	25-2011
6	VL	41,400	H	VL	H	Bachelor's degree	HS/SC/C	21.0	31.0	48.0	25-2012
82	-	-	-	-	-	-	-	-	-	-	25-2020
59	VH	43,160	H	VL	L	Bachelor's degree	C	2.8	4.9	92.3	25-2021
22	H	43,670	VH	VL	L	Bachelor's degree	C	2.8	4.9	92.3	25-2022
0	VL	43,990	VH	VL	L	Bachelor's plus experience <sup>7</sup>	C	2.8	4.9	92.3	25-2023
47	-	-	-	-	-	-	-	-	-	-	25-2030
44	H	45,650	VH	VL	L	Bachelor's degree	C	1.5	3.4	95.1	25-2031
4	VL	45,920	VH	VL	L	Bachelor's plus experience <sup>7</sup>	C	1.5	3.4	95.1	25-2032
20	-	44,320	VH	-	-	-	-	-	-	-	25-2040
10	L	43,570	H	VL	L	Bachelor's degree	C	3.2	5.2	91.6	25-2041
4	VL	44,160	VH	VL	L	Bachelor's degree	C	3.2	5.2	91.6	25-2042
6	VL	45,700	VH	VL	L	Bachelor's degree	C	3.2	5.2	91.6	25-2043
29	-	-	-	-	-	-	-	-	-	-	25-3000
3	VL	38,980	H	L	VH	Bachelor's degree	SC/C	14.0	33.0	53.0	25-3011
10	L	30,880	H	L	VH	Work experience in a related occupation	SC/C	14.0	33.0	53.0	25-3021
17	L	27,060	L	L	VH	Bachelor's degree	SC/C	14.0	33.0	53.0	25-3099
12	-	-	-	-	-	-	-	-	-	-	25-4000
1	-	36,920	H	-	-	-	-	-	-	-	25-4010
0	VL	36,470	H	L	H	Master's degree	C	7.2	3.2	89.7	25-4011
0	VL	43,620	VH	L	H	Master's degree	C	7.2	3.2	89.7	25-4012
0	VL	31,820	H	L	H	Master's degree	C	7.2	3.2	89.7	25-4013
5	VL	45,900	VH	VL	H	Master's degree	C	5.5	9.6	85.0	25-4021
6	VL	24,940	L	H	VH	Postsecondary vocational award	HS/SC/C	20.4	46.4	33.2	25-4031
52	-	-	-	-	-	-	-	-	-	-	25-9000
0	VL	32,990	H	VL	H	Moderate-term on-the-job training	C	1.5	11.3	87.2	25-9011
0	VL	41,600	H	VL	H	Bachelor's degree	C	1.5	11.3	87.2	25-9021
5	VL	48,790	VH	VL	H	Master's degree	C	1.5	11.3	87.2	25-9031
43	H	19,410	VL	L	VH	Short-term on-the-job training	HS/SC	40.6	42.8	16.6	25-9041
3	VL	29,720	H	VL	H	Bachelor's degree	C	1.5	11.3	87.2	25-9099
85	-	-	-	-	-	-	-	-	-	-	27-0000
22	-	-	-	-	-	-	-	-	-	-	27-1000
7	-	-	-	-	-	-	-	-	-	-	27-1010
2	VL	63,840	VH	L	H	Bachelor's plus experience <sup>7</sup>	SC/C	17.7	27.1	55.3	27-1011
0	VL	23,520	L	L	H	Long-term on-the-job training	SC/C	17.7	27.1	55.3	27-1012
1	VL	38,060	H	L	H	Long-term on-the-job training	SC/C	17.7	27.1	55.3	27-1013
3	VL	50,360	VH	L	H	Bachelor's degree	SC/C	17.7	27.1	55.3	27-1014
0	VL	30,620	H	L	H	Long-term on-the-job training	SC/C	17.7	27.1	55.3	27-1019
15	-	-	-	-	-	-	-	-	-	-	27-1020
1	VL	52,310	VH	L	H	Bachelor's degree	SC/C	15.7	3.0	54.4	27-1021
0	VL	55,840	VH	L	H	Associate degree	SC/C	15.7	3.0	54.4	27-1022
2	VL	20,450	L	L	H	Moderate-term on-the-job training	SC/C	15.7	3.0	54.4	27-1023
7	VL	38,030	H	L	H	Bachelor's degree	SC/C	15.7	3.0	54.4	27-1024
2	VL	40,670	H	L	H	Associate degree	SC/C	15.7	3.0	54.4	27-1025
2	VL	22,660	L	L	H	Moderate-term on-the-job training	SC/C	15.7	3.0	54.4	27-1026

See footnotes at end of table.

**Table IV–1. Occupational employment and job openings data, 2004–14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004–14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004–14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
27-1027	Set and exhibit designers .....	13	14	1	VL	9.3	L	27.6	2	VL
27-1029	Designers, all other .....	16	18	2	VL	13.6	L	16.4	2	VL
27-2000	Entertainers and performers, sports and related occupations .....	732	856	124	–	16.9	–	29.0	169	–
27-2010	Actors, producers, and directors .....	157	182	26	–	16.4	–	24.2	22	–
27-2011	Actors .....	74	85	12	VL	16.1	H	17.1	11	VL
27-2012	Producers and directors .....	83	97	14	VL	16.6	H	30.4	11	VL
27-2020	Athletes, coaches, umpires, and related workers .....	212	255	43	–	20.4	–	22.0	75	–
27-2021	Athletes and sports competitors .....	17	21	4	VL	21.1	VH	24.5	6	VL
27-2022	Coaches and scouts .....	178	215	36	L	20.4	VH	21.5	63	L
27-2023	Umpires, referees, and other sports officials .....	16	19	3	VL	19.0	VH	24.8	6	VL
27-2030	Dancers and choreographers .....	38	45	6	–	16.8	–	19.0	8	–
27-2031	Dancers .....	19	22	3	VL	16.8	H	20.3	4	VL
27-2032	Choreographers .....	19	22	3	VL	16.8	H	17.7	4	VL
27-2040	Musicians, singers, and related workers .....	249	282	33	–	13.2	–	41.8	48	–
27-2041	Music directors and composers .....	60	66	6	VL	10.5	L	44.8	11	VL
27-2042	Musicians and singers .....	189	216	26	L	14.0	L	40.8	37	L
27-2099	Entertainers and performers, sports and related workers, all other .....	76	92	16	VL	21.0	VH	23.9	17	VL
27-3000	Media and communication occupations .....	710	821	111	–	15.6	–	22.4	97	–
27-3010	Announcers .....	69	66	-3	–	-4.8	–	25.6	10	–
27-3011	Radio and television announcers .....	57	54	-4	VL	-6.5	VL	25.4	8	VL
27-3012	Public address system and other announcers .....	12	12	0	VL	3.8	VL	26.2	2	VL
27-3020	News analysts, reporters and correspondents .....	64	67	3	–	4.8	–	6.8	5	–
27-3021	Broadcast news analysts .....	8	8	0	VL	4.3	VL	6.9	1	VL
27-3022	Reporters and correspondents .....	56	59	3	VL	4.9	VL	6.8	4	VL
27-3031	Public relations specialists .....	188	231	43	L	22.9	VH	2.7	38	L
27-3040	Writers and editors .....	320	376	56	–	17.4	–	37.2	35	–
27-3041	Editors .....	127	146	19	L	14.8	H	14.8	16	VL
27-3042	Technical writers .....	50	62	12	VL	23.2	VH	7.3	5	VL
27-3043	Writers and authors .....	142	167	25	L	17.7	H	67.8	14	VL
27-3090	Miscellaneous media and communications workers .....	70	82	12	–	17.5	–	19.8	10	–
27-3091	Interpreters and translators .....	31	37	6	VL	19.9	VH	13.5	4	VL
27-3099	Media and communication workers, all other .....	39	46	6	VL	15.7	H	24.9	5	VL
27-4000	Media and communication equipment occupations .....	293	334	41	–	14.0	–	31.1	44	–
27-4010	Broadcast and sound engineering technicians and radio operators .....	95	109	14	–	14.5	–	6.6	11	–
27-4011	Audio and video equipment technicians .....	46	55	8	VL	18.1	H	5.9	5	VL
27-4012	Broadcast technicians .....	34	37	3	VL	9.8	L	7.4	4	VL
27-4013	Radio operators .....	2	2	0	VL	-12.9	VL	10.7	0	VL
27-4014	Sound engineering technicians .....	13	16	2	VL	18.4	H	6.5	2	VL
27-4021	Photographers .....	129	145	16	VL	12.3	L	58.8	23	VL
27-4030	Television, video, and motion picture camera operators and editors .....	49	56	8	–	16.0	–	19.8	7	–
27-4031	Camera operators, television, video, and motion picture .....	28	32	4	VL	14.2	H	21.1	4	VL
27-4032	Film and video editors .....	20	24	4	VL	18.6	VH	18.2	3	VL
27-4099	Media and communication equipment workers, all other <sup>1,5</sup> .....	19	23	3	VL	17.0	H	.0	3	VL
29-0000	Healthcare practitioners and technical occupations .....	6,805	8,561	1,756	–	25.8	–	3.6	651	–
29-1000	Health diagnosing and treating practitioners .....	4,190	5,330	1,140	–	27.2	–	5.2	367	–
29-1011	Chiropractors <sup>1</sup> .....	53	64	12	VL	22.4	VH	49.2	4	VL
29-1020	Dentists .....	150	171	20	–	13.5	–	30.9	8	–
29-1021	Dentists, general <sup>1</sup> .....	128	145	17	VL	13.5	L	30.7	7	VL
29-1022	Oral and maxillofacial surgeons <sup>1</sup> .....	6	7	1	VL	16.2	H	15.7	0	VL

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
		Dollars	Rank					High school or less	Some college	Bachelor's or higher	
Number	Rank										
0	VL	35,800	H	L	H	Bachelor's degree	SC/C	15.7	3.0	54.4	27-1027
0	VL	42,250	H	L	H	Bachelor's degree	SC/C	15.7	3.0	54.4	27-1029
27	-	-	-	-	-	-	-	-	-	-	27-2000
5	-	-	-	-	-	-	-	-	-	-	27-2010
2	VL	23,462	L	VH	H	Long-term on-the-job training	C	11.9	15.9	72.2	27-2011
3	VL	52,840	VH	H	L	Bachelor's plus experience <sup>7</sup>	SC/C	6.4	20.1	73.5	27-2012
8	-	-	-	-	-	-	-	-	-	-	27-2020
1	VL	48,310	VH	H	VH	Long-term on-the-job training	SC/C	15.1	27.1	57.8	27-2021
7	VL	26,350	L	H	VH	Long-term on-the-job training	SC/C	15.1	27.1	57.8	27-2022
1	VL	21,260	L	H	VH	Long-term on-the-job training	SC/C	15.1	27.1	57.8	27-2023
3	-	-	-	-	-	-	-	-	-	-	27-2030
2	VL	17,763	VL	VH	VH	Long-term on-the-job training	HS	67.4	19.6	13.0	27-2031
1	VL	33,670	H	VH	VH	Work experience in a related occupation	HS	67.4	19.6	13.0	27-2032
8	-	-	-	-	-	-	-	-	-	-	27-2040
2	VL	34,570	H	L	VH	Bachelor's plus experience <sup>7</sup>	HS/SC/C	24.4	28.3	47.3	27-2041
7	VL	37,128	H	L	VH	Long-term on-the-job training	HS/SC/C	24.4	28.3	47.3	27-2042
3	VL	34,798	H	L	H	Long-term on-the-job training	HS/SC/C	30.3	37.0	32.7	27-2099
25	-	-	-	-	-	-	-	-	-	-	27-3000
2	-	22,100	L	-	-	-	-	-	-	-	27-3010
1	VL	22,130	L	H	VH	Long-term on-the-job training	HS/SC/C	31.4	35.2	33.4	27-3011
0	VL	21,960	L	H	VH	Long-term on-the-job training	HS/SC/C	31.4	35.2	33.4	27-3012
2	-	31,910	H	-	-	-	-	-	-	-	27-3020
0	VL	36,980	H	L	L	Bachelor's plus experience <sup>7</sup>	C	2.9	6.7	90.5	27-3021
2	VL	31,320	H	L	L	Bachelor's plus experience <sup>7</sup>	C	2.9	6.7	90.5	27-3022
7	VL	43,830	VH	L	L	Bachelor's degree	C	4.8	14.6	80.6	27-3031
13	-	-	-	-	-	-	-	-	-	-	27-3040
5	VL	43,890	VH	L	H	Bachelor's degree	C	4.8	10.7	84.5	27-3041
3	VL	53,490	VH	VH	H	Bachelor's degree	SC/C	4.9	22.3	72.9	27-3042
5	VL	44,350	VH	H	H	Bachelor's degree	C	4.9	12.4	82.7	27-3043
2	-	-	-	-	-	-	-	-	-	-	27-3090
1	VL	33,860	H	L	VH	Long-term on-the-job training	SC/C	19.6	41.5	38.9	27-3091
1	VL	40,850	H	L	VH	Long-term on-the-job training	SC/C	19.6	41.5	38.9	27-3099
11	-	-	-	-	-	-	-	-	-	-	27-4000
4	-	-	-	-	-	-	-	-	-	-	27-4010
2	VL	32,570	H	L	L	Long-term on-the-job training	HS/SC/C	24.0	37.6	38.5	27-4011
1	VL	28,010	L	L	L	Associate degree	HS/SC/C	24.0	37.6	38.5	27-4012
0	VL	32,720	H	L	L	Moderate-term on-the-job training	HS/SC/C	24.0	37.6	38.5	27-4013
1	VL	38,110	H	L	L	Postsecondary vocational award	HS/SC/C	24.0	37.6	38.5	27-4014
4	VL	26,080	L	L	H	Long-term on-the-job training	HS/SC/C	23.8	27.1	49.1	27-4021
2	-	-	-	-	-	-	-	-	-	-	27-4030
1	VL	37,610	H	VH	H	Moderate-term on-the-job training	SC/C	8.6	34.3	57.1	27-4031
1	VL	43,590	H	VH	H	Bachelor's degree	SC/C	8.6	34.3	57.1	27-4032
1	VL	41,120	H	VH	H	Moderate-term on-the-job training	HS/SC/C	21.7	32.4	45.9	27-4099
305	-	-	-	-	-	-	-	-	-	-	29-0000
196	-	-	-	-	-	-	-	-	-	-	29-1000
2	VL	69,910	VH	VL	H	First professional degree	C	.2	.4	99.4	29-1011
5	-	129,920	VH	-	-	-	-	-	-	-	29-1020
4	VL	123,060	VH	VL	H	First professional degree	C	.3	1.2	98.5	29-1021
0	VL	145,600	VH	VL	H	First professional degree	C	.3	1.2	98.5	29-1022

See footnotes at end of table.

**Table IV–1. Occupational employment and job openings data, 2004–14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004–14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004–14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
29-1023	Orthodontists <sup>1</sup> .....	10	11	1	VL	12.8	L	35.9	1	VL
29-1024	Prosthodontists <sup>1</sup> .....	1	1	0	VL	13.6	L	38.2	0	VL
29-1029	Dentists, all other specialists <sup>1</sup> .....	5	6	1	VL	12.2	L	43.2	0	VL
29-1031	Dietitians and nutritionists.....	50	59	9	VL	18.3	H	3.6	4	VL
29-1041	Optometrists <sup>1</sup> .....	34	40	7	VL	19.7	VH	27.4	2	VL
29-1051	Pharmacists.....	230	287	57	L	24.6	VH	1.7	16	VL
29-1060	Physicians and surgeons.....	567	702	136	H	24.0	VH	11.5	41	L
29-1071	Physician assistants.....	62	93	31	L	49.6	VH	1.3	10	VL
29-1081	Podiatrists <sup>1,3</sup> .....	10	12	2	VL	16.2	H	19.8	1	VL
29-1111	Registered nurses.....	2,394	3,096	703	VH	29.4	VH	.7	229	H
29-1120	Therapists.....	509	647	138	–	27.1	–	6.4	37	–
29-1121	Audiologists <sup>1,2</sup> .....	10	11	1	VL	9.1	L	1.4	0	VL
29-1122	Occupational therapists.....	92	123	31	L	33.6	VH	6.0	7	VL
29-1123	Physical therapists.....	155	211	57	L	36.7	VH	4.5	13	VL
29-1124	Radiation therapists <sup>1,2</sup> .....	15	19	4	VL	26.3	VH	.0	1	VL
29-1125	Recreational therapists <sup>2</sup> .....	24	25	1	VL	5.7	VL	.0	3	VL
29-1126	Respiratory therapists <sup>1</sup> .....	94	120	27	L	28.4	VH	.4	7	VL
29-1127	Speech-language pathologists <sup>1</sup> .....	96	110	14	VL	14.6	H	6.0	5	VL
29-1129	Therapists, all other.....	24	28	4	VL	15.0	H	61.5	2	VL
29-1131	Veterinarians.....	61	71	11	VL	17.4	H	20.7	8	VL
29-1199	Health diagnosing and treating practitioners, all other.....	72	88	16	VL	22.5	VH	15.8	6	VL
29-2000	Health technologists and technicians.....	2,494	3,086	592	–	23.7	–	.8	274	–
29-2010	Clinical laboratory technologists and technicians.....	302	371	69	–	22.7	–	.1	28	–
29-2011	Medical and clinical laboratory technologists.....	156	188	32	L	20.5	VH	.1	14	VL
29-2012	Medical and clinical laboratory technicians.....	147	183	37	L	25.0	VH	.1	14	VL
29-2021	Dental hygienists.....	158	226	68	L	43.3	VH	.3	17	VL
29-2030	Diagnostic related technologists and technicians.....	287	363	75	–	26.3	–	.4	28	–
29-2031	Cardiovascular technologists and technicians.....	45	60	15	VL	32.6	VH	.4	5	VL
29-2032	Diagnostic medical sonographers.....	42	57	15	VL	34.8	VH	.4	5	VL
29-2033	Nuclear medicine technologists.....	18	22	4	VL	21.5	VH	.5	2	VL
29-2034	Radiologic technologists and technicians..	182	224	42	L	23.2	VH	.4	17	VL
29-2041	Emergency medical technicians and paramedics.....	192	244	52	L	27.3	VH	.1	21	VL
29-2050	Health diagnosing and treating practitioner support technicians.....	514	641	127	–	24.8	–	.3	67	–
29-2051	Dietetic technicians.....	25	30	5	VL	19.1	VH	.4	3	VL
29-2052	Pharmacy technicians.....	258	332	74	L	28.6	VH	.3	35	L
29-2053	Psychiatric technicians.....	61	63	2	VL	3.2	VL	.4	6	VL
29-2054	Respiratory therapy technicians.....	25	26	1	VL	3.3	VL	.3	2	VL
29-2055	Surgical technologists.....	84	109	25	L	29.5	VH	.3	12	VL
29-2056	Veterinary technologists and technicians..	60	81	21	L	35.3	VH	.3	9	VL
29-2061	Licensed practical and licensed vocational nurses.....	726	850	124	H	17.1	H	.6	84	L
29-2071	Medical records and health information technicians.....	159	205	46	L	28.9	VH	.1	14	VL
29-2081	Opticians, dispensing.....	66	75	9	VL	13.6	L	4.5	6	VL
29-2090	Miscellaneous health technologists and technicians.....	91	112	21	–	22.5	–	10.5	8	–
29-2091	Orthotists and prosthetists.....	6	7	1	VL	18.0	H	14.4	0	VL
29-2099	Healthcare technologists and technicians, all other.....	85	104	19	L	22.9	VH	10.2	8	VL
29-9000	Other healthcare practitioners and technical occupations.....	121	145	24	–	20.1	–	2.1	11	–
29-9010	Occupational health and safety specialists and technicians.....	51	58	7	–	13.5	–	3.8	4	–
29-9011	Occupational health and safety specialists <sup>1</sup>	40	45	5	VL	12.4	L	5.0	3	VL

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
		Dollars	Rank					High school or less	Some college	Bachelor's or higher	
Number	Rank										
0	VL	145,600	VH	VL	H	First professional degree	C	.3	1.2	98.5	29-1023
0	VL	145,600	VH	VL	H	First professional degree	C	.3	1.2	98.5	29-1024
0	VL	126,130	VH	VL	H	First professional degree	C	.3	1.2	98.5	29-1029
2	VL	43,630	VH	VL	H	Bachelor's Degree	HS/SC/C	25.5	11.5	63.0	29-1031
2	VL	88,410	VH	VL	H	First professional degree	C	8.1	3.1	88.7	29-1041
10	L	84,900	VH	VL	H	First professional degree	C	1.2	2.2	96.6	29-1051
21	L	145,600	VH	VL	L	First professional degree	C	.9	1.9	97.3	29-1060
4	VL	69,410	VH	VL	L	Bachelor's degree	SC/C	5.8	25.6	68.6	29-1071
0	VL	94,400	VH	VL	H	First professional degree	C	2.5	3.3	94.2	29-1081
120	VH	52,330	VH	VL	H	Associate degree	SC/C	1.7	40.1	58.2	29-1111
24	-	-	-	-	-	-	-	-	-	-	29-1120
0	VL	51,470	VH	VL	H	First professional degree	C	.6	2.3	97.1	29-1121
4	VL	54,660	VH	VL	VH	Master's degree	C	.3	14.9	84.8	29-1122
7	VL	60,180	VH	VL	H	Master's degree	C	2.2	7.6	90.2	29-1123
1	VL	57,700	VH	VL	H	Associate Degree	SC/C	1.5	52.6	45.9	29-1124
1	VL	32,900	H	VL	H	Bachelor's degree	SC/C	9.4	21.5	69.1	29-1125
6	VL	43,140	H	VL	H	Associate degree	SC/C	3.9	68.0	28.0	29-1126
4	VL	52,410	VH	VL	H	Master's degree	C	.3	.3	99.4	29-1127
1	VL	40,180	H	VL	H	Bachelor's degree	C	4.8	10.4	84.9	29-1129
3	VL	66,590	VH	VL	L	First professional degree	C	3.5	1.1	95.4	29-1131
3	VL	57,970	VH	VL	VH	Bachelor's degree	C	3.1	11.3	85.6	29-1199
104	-	-	-	-	-	-	-	-	-	-	29-2000
15	-	-	-	-	-	-	-	-	-	-	29-2010
7	L	45,730	VH	VL	H	Bachelor's degree	SC/C	17.6	34.4	48.0	29-2011
8	L	30,840	H	VL	H	Associate degree	SC/C	17.6	34.4	48.0	29-2012
8	L	58,350	VH	VL	VH	Associate degree	SC/C	4.0	65.9	3.0	29-2021
13	-	-	-	-	-	-	-	-	-	-	29-2030
2	VL	38,690	H	VL	H	Associate degree	SC/C	9.1	68.3	22.6	29-2031
2	VL	52,490	VH	VL	H	Associate degree	SC/C	9.1	68.3	22.6	29-2032
1	VL	56,450	VH	VL	H	Associate degree	SC/C	9.1	68.3	22.6	29-2033
8	L	43,350	H	VL	H	Associate degree	SC/C	9.1	68.3	22.6	29-2034
7	L	25,310	L	VL	L	Postsecondary vocational award	SC	18.1	64.7	17.2	29-2041
19	-	-	-	-	-	-	-	-	-	-	29-2050
1	VL	22,990	L	VL	H	Moderate-term on-the-job training	HS/SC	32.1	53.3	14.7	29-2051
11	L	23,650	L	VL	H	Moderate-term on-the-job training	HS/SC	32.1	53.3	14.7	29-2052
1	VL	25,540	L	VL	H	Moderate-term on-the-job training	HS/SC	32.1	53.3	14.7	29-2053
0	VL	36,740	H	VL	H	Associate degree	HS/SC	32.1	53.3	14.7	29-2054
4	VL	34,010	H	VL	H	Postsecondary vocational award	HS/SC	32.1	53.3	14.7	29-2055
3	VL	24,940	L	VL	H	Associate degree	HS/SC	32.1	53.3	14.7	29-2056
28	H	33,970	H	VL	H	Postsecondary vocational award	HS/SC	22.8	70.9	6.3	29-2061
7	VL	25,590	L	VL	H	Associate degree	HS/SC	43.2	44.8	12.0	29-2071
2	VL	27,950	L	VL	H	Long-term on-the-job training	HS/SC	28.0	53.6	18.4	29-2081
4	-	-	-	-	-	-	-	-	-	-	29-2090
0	VL	50,260	VH	VL	H	Bachelor's degree	HS/SC/C	29.4	42.0	28.6	29-2091
3	VL	34,230	H	VL	H	Postsecondary vocational award	HS/SC/C	29.4	42.0	28.6	29-2099
5	-	-	-	-	-	-	-	-	-	-	29-9000
2	-	49,690	VH	-	-	-	-	-	-	-	29-9010
1	VL	51,570	VH	L	L	Bachelor's degree	C	6.9	14.8	78.3	29-9011

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004-14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004-14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
29-9012	Occupational health and safety technicians <sup>1</sup> .....	12	14	2	VL	17.1	H	.0	1	VL
29-9090	Miscellaneous health practitioners and technical workers .....	70	87	17	-	25.0	-	.9	7	-
29-9091	Athletic trainers <sup>1</sup> .....	15	19	4	VL	29.3	VH	4.0	1	VL
29-9099	Healthcare practitioners and technical workers, all other <sup>1</sup> .....	55	68	13	VL	23.8	VH	.0	5	VL
<b>31-3900</b>	<b>Service occupations</b> .....	<b>27,673</b>	<b>32,930</b>	<b>5,257</b>	<b>-</b>	<b>19.0</b>	<b>-</b>	<b>6.4</b>	<b>7,067</b>	<b>-</b>
31-1000	Nursing, psychiatric, and home health aides...	2,139	2,815	676	-	31.6	-	1.7	487	-
31-1011	Home health aides .....	624	974	350	VH	56.0	VH	1.4	170	H
31-1012	Nursing aides, orderlies, and attendants.....	1,455	1,781	325	VH	22.3	VH	1.9	307	VH
31-1013	Psychiatric aides .....	59	61	1	VL	2.3	VL	2.3	10	VL
31-2000	Occupational and physical therapist assistants and aides .....	128	178	49	-	38.5	-	.2	15	-
31-2010	Occupational therapist assistants and aides	27	35	9	-	32.5	-	.0	3	-
31-2011	Occupational therapist assistants <sup>1,3</sup> .....	21	29	7	VL	34.1	VH	.0	2	VL
31-2012	Occupational therapist aides <sup>1,3</sup> .....	5	7	1	VL	26.3	VH	.0	0	VL
31-2020	Physical therapist assistants and aides.....	101	142	41	-	40.1	-	.2	12	-
31-2021	Physical therapist assistants .....	59	85	26	L	44.2	VH	.2	7	VL
31-2022	Physical therapist aides.....	43	57	15	VL	34.4	VH	.2	5	VL
31-9000	Other healthcare support occupations .....	1,225	1,664	438	-	35.8	-	6.6	239	-
31-9011	Massage therapists .....	97	120	23	L	23.6	VH	64.1	12	VL
31-9090	Miscellaneous healthcare support occupations.....	1,129	1,544	415	-	36.8	-	2.2	227	-
31-9091	Dental assistants .....	267	382	114	H	42.7	VH	.0	45	L
31-9092	Medical assistants .....	387	589	202	H	52.1	VH	.0	93	L
31-9093	Medical equipment preparers .....	43	51	9	VL	2.0	VH	2.7	8	VL
31-9094	Medical transcriptionists .....	105	129	24	L	23.3	VH	9.7	20	VL
31-9095	Pharmacy aides.....	50	59	9	VL	17.4	H	3.9	9	VL
31-9096	Veterinary assistants and laboratory animal caretakers .....	74	90	16	VL	21.0	VH	2.7	14	VL
31-9099	Healthcare support workers, all other.....	202	244	42	L	20.9	VH	6.1	38	L
33-0000	Protective service occupations .....	3,138	3,578	440	-	14.0	-	.6	528	-
33-1000	First-line supervisors/managers, protective service workers .....	243	278	35	-	14.5	-	.3	20	-
33-1010	First-line supervisors/managers, law enforcement workers .....	138	157	19	-	13.8	-	.0	11	-
33-1011	First-line supervisors/managers of correctional officers.....	38	41	4	VL	9.4	L	.0	2	VL
33-1012	First-line supervisors/managers of police and detectives.....	100	115	16	VL	15.5	H	.0	9	VL
33-1021	First-line supervisors/managers of fire fighting and prevention workers <sup>1</sup> .....	56	68	12	VL	21.1	VH	.0	4	VL
33-1099	First-line supervisors/managers, protective service workers, all other .....	50	54	4	VL	8.7	L	1.4	5	VL
33-2000	Fire fighting and prevention workers .....	297	365	68	-	22.9	-	.1	22	-
33-2011	Fire fighters .....	282	351	69	L	24.3	VH	.1	21	VL
33-2020	Fire inspectors .....	15	14	-1	-	-5.2	-	.0	1	-
33-2021	Fire inspectors and investigators.....	13	12	-1	VL	-5.5	VL	.0	0	VL
33-2022	Forest fire inspectors and prevention specialists .....	2	2	0	VL	-3.1	VL	.0	0	VL
33-3000	Law enforcement workers .....	1,199	1,347	148	-	12.3	-	.0	114	-
33-3010	Bailiffs, correctional officers, and jailers .....	447	478	31	-	7.0	-	.0	57	-
33-3011	Bailiffs .....	18	20	2	VL	13.2	L	.0	2	VL
33-3012	Correctional officers and jailers .....	429	458	29	L	6.7	VL	.0	54	L
33-3021	Detectives and criminal investigators <sup>1</sup> .....	91	106	15	VL	16.4	H	.0	9	VL
33-3031	Fish and game wardens <sup>1,5</sup> .....	7	8	1	VL	10.5	L	.0	1	VL
33-3041	Parking enforcement workers <sup>5</sup> .....	11	12	2	VL	15.1	H	1.5	1	VL
33-3050	Police officers .....	644	743	100	-	15.5	-	.0	47	-
33-3051	Police and sheriff's patrol officers.....	639	738	99	H	15.5	H	.0	47	L

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
Number	Rank	Dollars	Rank					High school or less	Some college	Bachelor's or higher	
0	VL	42,130	H	L	L	Postsecondary vocational award	C	6.9	14.8	78.3	29-9012
3	-	-	-	-	-	-	-	-	-	-	29-9090
1	VL	33,940	H	L	L	Bachelor's degree	C	6.9	14.8	78.3	29-9091
2	VL	33,360	H	L	L	Postsecondary vocational award	C	6.9	14.8	78.3	29-9099
<b>1,321</b>	-	-	-	-	-	-	-	-	-	-	<b>31-3900</b>
96	-	-	-	-	-	-	-	-	-	-	31-1000
43	H	18,330	VL	H	H	Short-term on-the-job training	HS/SC	60.7	32.8	6.6	31-1011
52	VH	20,980	L	H	H	Postsecondary vocational award	HS/SC	60.7	32.8	6.6	31-1012
1	VL	23,280	L	H	H	Short-term on-the-job training	HS/SC	60.7	32.8	6.6	31-1013
7	-	-	-	-	-	-	-	-	-	-	31-2000
1	-	-	-	-	-	-	-	-	-	-	31-2010
1	VL	38,430	H	VL	H	Associate degree	SC	8.2	79.4	12.3	31-2011
0	VL	23,150	L	VL	H	Short-term on-the-job training	SC	8.2	79.4	12.3	31-2012
6	-	-	-	-	-	-	-	-	-	-	31-2020
4	VL	37,890	H	VL	VH	Associate degree	SC/C	17.6	52.0	30.4	31-2021
2	VL	21,380	L	VL	VH	Short-term on-the-job training	SC/C	17.6	52.0	30.4	31-2022
69	-	-	-	-	-	-	-	-	-	-	31-9000
4	VL	31,960	H	VL	VH	Postsecondary vocational award	SC/C	16.2	50.6	33.2	31-9011
65	-	-	-	-	-	-	-	-	-	-	31-9090
19	L	28,330	L	VL	VH	Moderate-term on-the-job training	HS/SC	32.9	56.7	10.4	31-9091
27	H	24,610	L	L	H	Moderate-term on-the-job training	HS/SC	35.3	53.4	11.4	31-9092
2	VL	24,450	L	L	H	Short-term on-the-job training	HS/SC	35.3	53.4	11.4	31-9093
4	VL	28,380	L	L	H	Postsecondary vocational award	HS/SC	35.3	53.4	11.4	31-9094
2	VL	18,420	VL	L	H	Short-term on-the-job training	HS/SC	35.3	53.4	11.4	31-9095
3	VL	18,660	VL	L	H	Short-term on-the-job training	HS/SC	35.3	53.4	11.4	31-9096
8	L	24,990	L	L	H	Short-term on-the-job training	HS/SC	35.3	53.4	11.4	31-9099
133	-	-	-	-	-	-	-	-	-	-	33-0000
11	-	-	-	-	-	-	-	-	-	-	33-1000
6	-	-	-	-	-	-	-	-	-	-	33-1010
1	VL	44,720	VH	VL	VL	Work experience in a related occupation	HS/SC/C	25.4	49.1	25.5	33-1011
5	VL	64,430	VH	VL	VL	Work experience in a related occupation	SC/C	17.0	52.8	30.2	33-1012
3	VL	58,920	VH	VL	VL	Work experience in a related occupation	SC/C	14.4	60.6	25.0	33-1021
2	VL	37,260	H	L	VL	Work experience in a related occupation	HS/SC/C	37.2	40.5	22.3	33-1099
15	-	-	-	-	-	-	-	-	-	-	33-2000
15	L	38,330	H	VL	VL	Long-term on-the-job training	HS/SC	22.2	57.9	19.9	33-2011
0	-	45,430	VH	-	-	-	-	-	-	-	33-2020
0	VL	46,340	VH	L	VL	Work experience in a related occupation	HS/SC	33.5	53.9	12.6	33-2021
0	VL	39,050	H	L	VL	Work experience in a related occupation	HS/SC	33.5	53.9	12.6	33-2022
44	-	-	-	-	-	-	-	-	-	-	33-3000
12	-	-	-	-	-	-	-	-	-	-	33-3010
1	VL	33,870	H	VL	VL	Moderate-term on-the-job training	HS/SC	39.4	47.7	12.9	33-3011
12	L	33,600	H	VL	VL	Moderate-term on-the-job training	HS/SC	39.4	47.7	12.9	33-3012
4	VL	53,990	VH	VL	VL	Work experience in a related occupation	SC/C	12.3	35.1	52.6	33-3021
0	VL	42,780	H	VL	VL	Associate degree	HS/SC/C	25.3	47.6	27.1	33-3031
0	VL	28,370	L	VL	VL	Short-term on-the-job training	HS/SC/C	25.3	47.6	27.1	33-3041
27	-	-	-	-	-	-	-	-	-	-	33-3050
26	H	45,210	VH	VL	VL	Long-term on-the-job training	SC/C	19.9	49.8	30.3	33-3051

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004-14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004-14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
33-3052	Transit and railroad police <sup>1,5</sup> .....	5	5	0	VL	9.2	L	.0	0	VL
33-9000	Other protective service workers.....	1,399	1,588	189	-	13.5	-	1.4	372	-
33-9011	Animal control workers <sup>1,2</sup> .....	15	17	2	VL	14.4	H	4.9	4	VL
33-9021	Private detectives and investigators.....	43	50	8	VL	17.7	H	23.7	7	VL
33-9030	Security guards and gaming surveillance officers.....	1,025	1,155	130	-	12.7	-	.7	232	-
33-9031	Gaming surveillance officers and gaming investigators.....	9	11	2	VL	24.5	VH	.8	2	VL
33-9032	Security guards.....	1,016	1,144	128	H	12.6	L	.7	230	H
33-9090	Miscellaneous protective service workers.....	316	366	50	-	15.8	-	.4	129	-
33-9091	Crossing guards.....	71	86	14	VL	19.7	VH	.0	26	VL
33-9092	Lifeguards, ski patrol, and other recreational protective service workers <sup>1</sup> .....	113	137	23	L	20.4	VH	.2	49	L
33-9099	Protective service workers, all other <sup>1</sup> .....	131	144	13	VL	9.6	L	.9	53	L
35-0000	Food preparation and serving related occupations.....	10,739	12,453	1,714	-	16.0	-	.7	3,395	-
35-1000	Supervisors, food preparation and serving workers.....	898	1,047	149	-	16.6	-	3.8	198	-
35-1011	Chefs and head cooks.....	125	146	21	L	16.7	H	4.4	11	VL
35-1012	First-line supervisors/managers of food preparation and serving workers.....	773	901	129	H	16.6	H	3.7	187	H
35-2000	Cooks and food preparation workers.....	3,011	3,459	448	-	14.9	-	.8	837	-
35-2010	Cooks.....	2,122	2,395	272	-	12.8	-	.8	543	-
35-2011	Cooks, fast food.....	662	771	109	H	16.4	H	.8	174	H
35-2012	Cooks, institution and cafeteria.....	424	430	6	VL	1.4	VL	1.0	98	L
35-2013	Cooks, private household.....	9	9	-1	VL	-5.6	VL	.9	2	VL
35-2014	Cooks, restaurant.....	783	914	130	H	16.6	H	.8	207	H
35-2015	Cooks, short order.....	230	257	27	L	11.8	L	.9	58	L
35-2019	Cooks, all other.....	13	14	1	VL	5.7	VL	.6	3	VL
35-2021	Food preparation workers.....	889	1,064	175	H	19.7	VH	.7	294	VH
35-3000	Food and beverage serving workers.....	5,530	6,440	911	-	16.5	-	.3	1,877	-
35-3011	Bartenders.....	474	545	70	L	14.8	H	1.3	82	L
35-3020	Fast food and counter workers.....	2,614	3,062	448	-	17.1	-	.2	950	-
35-3021	Combined food preparation and serving workers, including fast food.....	2,150	2,516	367	VH	17.1	H	.1	751	VH
35-3022	Counter attendants, cafeteria, food concession, and coffee shop.....	465	546	81	H	17.5	H	.7	199	H
35-3031	Waiters and waitresses.....	2,252	2,627	376	VH	16.7	H	.3	800	VH
35-3041	Food servers, nonrestaurant.....	189	206	17	VL	8.8	L	.2	45	L
35-9000	Other food preparation and serving related workers.....	1,301	1,507	206	-	15.9	-	.4	483	-
35-9011	Dining room and cafeteria attendants and bartender helpers.....	401	464	62	L	15.6	H	.4	174	H
35-9021	Dishwashers.....	507	587	80	H	15.8	H	.1	164	H
35-9031	Hosts and hostesses, restaurant, lounge, and coffee shop <sup>1</sup> .....	328	381	53	L	16.3	H	.9	116	H
35-9099	Food preparation and serving related workers, all other <sup>1,5</sup> .....	64	75	11	VL	16.7	H	.0	28	VL
37-0000	Building and grounds cleaning and maintenance occupations.....	5,582	6,530	948	-	17.0	-	10.4	1,150	-
37-1000	Supervisors, building and grounds cleaning and maintenance workers.....	420	497	78	-	18.5	-	23.5	35	-
37-1011	First-line supervisors/managers of housekeeping and janitorial workers.....	236	281	45	L	19.0	VH	8.9	21	VL
37-1012	First-line supervisors/managers of landscaping, lawn service, and groundskeeping workers.....	184	217	33	L	17.8	H	42.4	14	VL
37-2000	Building cleaning and pest control workers.....	3,879	4,500	620	-	16.0	-	5.5	850	-
37-2010	Building cleaning workers.....	3,811	4,418	608	-	16.0	-	5.5	846	-

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
		Dollars	Rank					High school or less	Some college	Bachelor's or higher	
Number	Rank										
0	VL	45,430	VH	VL	VL	Long-term on-the-job training	HS/SC/C	2.0	49.6	30.4	33-3052
62	-	-	-	-	-	-	-	-	-	-	33-9000
1	VL	26,210	L	L	L	Moderate-term on-the-job training	HS/SC	54.3	32.4	13.2	33-9011
2	VL	32,110	H	L	L	Work experience in a related occupation	SC/C	15.4	37.2	47.3	33-9021
35	-	-	-	-	-	-	-	-	-	-	33-9030
0	VL	25,840	L	VH	H	Moderate-term on-the-job training	HS/SC	51.1	36.4	12.5	33-9031
35	H	20,320	L	VH	H	Short-term on-the-job training	HS/SC	51.1	36.4	12.5	33-9032
24	-	-	-	-	-	-	-	-	-	-	33-9090
4	VL	19,300	VL	VH	VH	Short-term on-the-job training	HS/SC	72.1	22.4	5.5	33-9091
10	L	16,540	VL	VH	VH	Short-term on-the-job training	HS/SC/C	33.3	38.3	28.4	33-9092
10	L	28,080	L	VH	VH	Short-term on-the-job training	HS/SC/C	33.3	38.3	28.4	33-9099
598	-	-	-	-	-	-	-	-	-	-	35-0000
37	-	-	-	-	-	-	-	-	-	-	35-1000
6	VL	30,680	H	H	L	Work experience in a related occupation	HS/SC	46.6	38.5	14.9	35-1011
31	H	25,410	L	L	L	Work experience in a related occupation	HS/SC	54.3	31.2	14.5	35-1012
142	-	-	-	-	-	-	-	-	-	-	35-2000
93	-	-	-	-	-	-	-	-	-	-	35-2010
31	H	14,700	VL	VH	VH	Short-term on-the-job training	HS	78.9	16.0	5.1	35-2011
14	L	18,930	VL	VH	VH	Moderate-term on-the-job training	HS	78.9	16.0	5.1	35-2012
0	VL	19,600	VL	VH	VH	Long-term on-the-job training	HS	78.9	16.0	5.1	35-2013
37	H	19,520	VL	VH	VH	Long-term on-the-job training	HS	78.9	16.0	5.1	35-2014
10	L	16,860	VL	VH	VH	Short-term on-the-job training	HS	78.9	16.0	5.1	35-2015
0	VL	20,990	L	VH	VH	Moderate-term on-the-job training	HS	78.9	16.0	5.1	35-2019
49	H	16,710	VL	VH	VH	Short-term on-the-job training	HS	78.5	14.6	6.9	35-2021
355	-	-	-	-	-	-	-	-	-	-	35-3000
26	H	15,440	VL	H	VH	Short-term on-the-job training	HS/SC	44.0	38.9	17.1	35-3011
168	-	-	-	-	-	-	-	-	-	-	35-3020
130	VH	14,690	VL	VH	VH	Short-term on-the-job training	HS/SC	69.0	25.1	5.9	35-3021
38	H	15,660	VL	VH	VH	Short-term on-the-job training	HS/SC	66.5	24.2	9.3	35-3022
153	VH	14,050	VL	VH	VH	Short-term on-the-job training	HS/SC	53.6	31.7	14.7	35-3031
8	L	16,540	VL	H	VH	Short-term on-the-job training	HS	72.4	19.4	8.1	35-3041
64	-	-	-	-	-	-	-	-	-	-	35-9000
20	L	14,770	VL	VH	VH	Short-term on-the-job training	HS	78.7	13.9	7.3	35-9011
25	H	15,280	VL	VH	VH	Short-term on-the-job training	HS	90.8	5.6	3.6	35-9021
16	L	15,630	VL	VH	VH	Short-term on-the-job training	HS/SC	44.1	37.6	18.4	35-9031
3	VL	17,180	VL	VH	VH	Short-term on-the-job training	HS	78.9	13.7	7.3	35-9099
206	-	-	-	-	-	-	-	-	-	-	37-0000
15	-	-	-	-	-	-	-	-	-	-	37-1000
10	L	29,510	H	L	L	Work experience in a related occupation	HS/SC	70.2	21.6	8.2	37-1011
5	VL	35,340	H	VL	VL	Work experience in a related occupation	HS/SC	48.2	32.7	19.1	37-1012
138	-	-	-	-	-	-	-	-	-	-	37-2000
136	-	-	-	-	-	-	-	-	-	-	37-2010

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004-14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004-14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
37-2011	Janitors and cleaners, except maids and housekeeping cleaners .....	2,374	2,813	440	VH	18.5	VH	4.8	528	VH
37-2012	Maids and housekeeping cleaners .....	1,422	1,587	165	H	11.6	L	6.6	314	VH
37-2019	Building cleaning workers, all other .....	15	18	3	VL	19.8	VH	3.2	3	VL
37-2021	Pest control workers .....	68	81	13	VL	18.4	H	9.7	4	VL
37-3000	Grounds maintenance workers .....	1,283	1,533	250	-	19.4	-	20.4	265	-
37-3010	Grounds maintenance workers .....	1,283	1,533	250	-	19.4	-	20.4	265	-
37-3011	Landscaping and groundskeeping workers .....	1,177	1,407	230	VH	19.5	VH	20.5	243	H
37-3012	Pesticide handlers, sprayers, and applicators, vegetation .....	30	34	5	VL	16.6	H	19.6	6	VL
37-3013	Tree trimmers and pruners .....	55	64	9	VL	16.5	H	22.2	11	VL
37-3019	Grounds maintenance workers, all other .....	21	27	6	VL	26.3	VH	9.1	5	VL
39-0000	Personal care and service occupations .....	4,721	5,713	991	-	21.0	-	20.3	1,254	-
39-1000	Supervisors, personal care and service workers .....	267	316	49	-	18.4	-	32.4	33	-
39-1010	First-line supervisors/managers of gaming workers .....	61	72	11	-	18.8	-	27.7	13	-
39-1011	Gaming supervisors .....	38	44	6	VL	16.3	H	29.6	8	VL
39-1012	Slot key persons .....	23	28	5	VL	23.0	VH	24.7	5	VL
39-1021	First-line supervisors/managers of personal service workers .....	206	244	38	L	18.3	H	33.8	20	VL
39-2000	Animal care and service workers .....	172	214	42	-	24.3	-	34.8	34	-
39-2011	Animal trainers .....	44	53	9	VL	20.3	VH	58.2	3	VL
39-2021	Nonfarm animal caretakers .....	128	161	33	L	25.6	VH	27.1	31	L
39-3000	Entertainment attendants and related workers .....	558	682	125	-	22.4	-	.8	227	-
39-3010	Gaming services workers .....	116	147	31	-	26.6	-	.6	15	-
39-3011	Gaming dealers .....	83	106	23	L	28.0	VH	.6	11	VL
39-3012	Gaming and sports book writers and runners .....	18	22	4	VL	22.1	VH	.5	2	VL
39-3019	Gaming service workers, all other .....	15	19	4	VL	24.2	VH	.5	2	VL
39-3021	Motion picture projectionists <sup>1,4</sup> .....	12	11	-1	VL	-9.9	VL	9.9	4	VL
39-3031	Ushers, lobby attendants, and ticket takers <sup>1,2</sup> .....	112	124	12	VL	10.6	L	.0	45	L
39-3090	Miscellaneous entertainment attendants and related workers .....	318	401	83	-	26.2	-	.8	163	-
39-3091	Amusement and recreation attendants .....	252	322	70	L	28.0	VH	.8	130	H
39-3092	Costume attendants .....	4	4	1	VL	23.4	VH	.9	2	VL
39-3093	Locker room, coatroom, and dressing room attendants .....	25	29	4	VL	17.3	H	.8	12	VL
39-3099	Entertainment attendants and related workers, all other .....	38	45	8	VL	2.0	VH	.6	19	VL
39-4000	Funeral service workers .....	38	46	8	-	19.7	-	.0	10	-
39-4011	Embalmers <sup>1,3</sup> .....	9	10	1	VL	15.7	H	.0	2	VL
39-4021	Funeral attendants <sup>1,3</sup> .....	30	36	6	VL	20.8	VH	.0	8	VL
39-5000	Personal appearance workers .....	790	915	126	-	15.9	-	43.9	88	-
39-5010	Barbers and cosmetologists .....	670	773	103	-	15.4	-	46.1	64	-
39-5011	Barbers .....	60	65	5	VL	8.2	L	71.0	5	VL
39-5012	Hairdressers, hairstylists, and cosmetologists .....	610	708	98	H	16.1	H	43.8	59	L
39-5090	Miscellaneous personal appearance workers .....	120	142	23	-	18.9	-	31.4	24	-
39-5091	Makeup artists, theatrical and performance .....	2	2	0	VL	13.2	L	35.8	0	VL
39-5092	Manicurists and pedicurists .....	60	73	13	VL	21.0	VH	30.5	12	VL
39-5093	Shampooers .....	27	31	4	VL	13.1	L	35.8	5	VL
39-5094	Skin care specialists .....	30	37	6	VL	20.4	VH	29.6	6	VL
39-6000	Transportation, tourism, and lodging attendants .....	248	287	39	-	15.6	-	2.7	22	-
39-6010	Baggage porters, bellhops, and concierges .....	75	85	11	-	14.4	-	.0	7	-
39-6011	Baggage porters and bellhops .....	57	65	8	VL	14.0	L	.0	5	VL
39-6012	Concierges .....	18	21	3	VL	16.0	H	.0	2	VL
39-6020	Tour and travel guides .....	44	51	7	-	15.7	-	14.8	6	-
39-6021	Tour guides and escorts <sup>2</sup> .....	38	44	6	VL	16.6	H	14.4	5	VL
39-6022	Travel guides <sup>2</sup> .....	6	6	1	VL	9.6	L	18.0	1	VL
39-6030	Transportation attendants .....	130	151	21	-	16.2	-	.2	9	-
39-6031	Flight attendants .....	102	119	17	VL	16.3	H	.2	7	VL

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
		Dollars	Rank					High school or less	Some college	Bachelor's or higher	
Number	Rank										
89	VH	18,790	VL	H	H	Short-term on-the-job training	HS	78.9	17.0	4.1	37-2011
46	H	16,900	VL	H	VH	Short-term on-the-job training	HS	82.4	12.5	5.1	37-2012
1	VL	21,160	L	H	H	Short-term on-the-job training	HS	78.9	17.0	4.1	37-2019
2	VL	26,220	L	H	VL	Moderate-term on-the-job training	HS/SC	52.2	35.4	12.4	37-2021
53	-	-	-	-	-	-	-	-	-	-	37-3000
53	-	-	-	-	-	-	-	-	-	-	37-3010
49	H	20,420	L	VH	H	Short-term on-the-job training	HS	77.0	16.8	6.2	37-3011
1	VL	25,590	L	VH	H	Moderate-term on-the-job training	HS	77.0	16.8	6.2	37-3012
2	VL	26,150	L	VH	H	Short-term on-the-job training	HS	77.0	16.8	6.2	37-3013
1	VL	19,900	VL	VH	H	Short-term on-the-job training	HS	77.0	16.8	6.2	37-3019
212	-	-	-	-	-	-	-	-	-	-	39-0000
11	-	-	-	-	-	-	-	-	-	-	39-1000
2	-	-	-	-	-	-	-	-	-	-	39-1010
1	VL	40,840	H	VL	L	Work experience in a related occupation	HS/SC/C	29.7	33.2	37.1	39-1011
1	VL	23,010	L	VL	L	Postsecondary vocational award	HS/SC/C	29.7	33.2	37.1	39-1012
9	L	30,350	H	VL	H	Work experience in a related occupation	HS/SC	49.4	36.8	13.9	39-1021
8	-	-	-	-	-	-	-	-	-	-	39-2000
2	VL	22,050	L	VL	H	Moderate-term on-the-job training	HS/SC/C	46.2	21.9	31.8	39-2011
6	VL	17,460	VL	L	VH	Short-term on-the-job training	HS/SC	55.3	32.3	12.4	39-2021
32	-	-	-	-	-	-	-	-	-	-	39-3000
7	-	-	-	-	-	-	-	-	-	-	39-3010
5	VL	14,340	VL	H	H	Postsecondary vocational award	HS/SC	50.7	34.8	14.5	39-3011
1	VL	18,390	VL	H	H	Short-term on-the-job training	HS/SC	50.7	34.8	14.5	39-3012
1	VL	20,820	L	H	H	Moderate-term on-the-job training	HS/SC	50.7	34.8	14.5	39-3019
1	VL	17,310	VL	VH	VH	Short-term on-the-job training	HS/SC	46.0	40.6	13.4	39-3021
8	L	15,190	VL	VH	VH	Short-term on-the-job training	HS/SC	60.9	31.7	7.4	39-3031
18	-	-	-	-	-	-	-	-	-	-	39-3090
14	L	15,550	VL	VH	VH	Short-term on-the-job training	HS/SC/C	36.2	4.0	23.8	39-3091
0	VL	25,050	L	VH	VH	Short-term on-the-job training	HS/SC/C	36.2	4.0	23.8	39-3092
1	VL	17,550	VL	VH	VH	Short-term on-the-job training	HS/SC/C	36.2	4.0	23.8	39-3093
2	VL	16,930	VL	VH	VH	Moderate-term on-the-job training	HS/SC/C	36.2	4.0	23.8	39-3099
2	-	-	-	-	-	-	-	-	-	-	39-4000
0	VL	35,540	H	H	H	Postsecondary vocational award	HS/SC	39.4	41.3	19.3	39-4011
1	VL	19,250	VL	H	H	Short-term on-the-job training	HS/SC	39.4	41.3	19.3	39-4021
28	-	-	-	-	-	-	-	-	-	-	39-5000
24	-	-	-	-	-	-	-	-	-	-	39-5010
2	VL	21,200	L	VL	H	Postsecondary vocational award	HS/SC	66.9	30.6	2.6	39-5011
22	H	19,800	VL	VL	VH	Postsecondary vocational award	HS/SC	53.2	42.7	4.1	39-5012
5	-	-	-	-	-	-	-	-	-	-	39-5090
0	VL	24,410	L	L	VH	Postsecondary vocational award	HS/SC	60.7	28.5	10.8	39-5091
2	VL	18,500	VL	L	VH	Postsecondary vocational award	HS/SC	60.7	28.5	10.8	39-5092
1	VL	14,610	VL	L	VH	Short-term on-the-job training	HS/SC	60.7	28.5	10.8	39-5093
1	VL	24,010	L	L	VH	Postsecondary vocational award	HS/SC	60.7	28.5	10.8	39-5094
9	-	-	-	-	-	-	-	-	-	-	39-6000
3	-	-	-	-	-	-	-	-	-	-	39-6010
2	VL	17,760	VL	L	H	Short-term on-the-job training	HS/SC	50.5	34.5	15.0	39-6011
1	VL	23,370	L	L	H	Moderate-term on-the-job training	HS/SC	50.5	34.5	15.0	39-6012
2	-	-	-	-	-	-	-	-	-	-	39-6020
2	VL	19,390	VL	VH	VH	Moderate-term on-the-job training	HS/SC/C	38.1	29.7	32.2	39-6021
0	VL	27,460	L	VH	VH	Moderate-term on-the-job training	HS/SC/C	38.1	29.7	32.2	39-6022
4	-	-	-	-	-	-	-	-	-	-	39-6030
3	VL	43,440	H	H	VH	Long-term on-the-job training	HS/SC/C	20.4	46.8	32.8	39-6031

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004-14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004-14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
39-6032	Transportation attendants, except flight attendants and baggage porters.....	28	32	4	VL	15.9	H	.2	2	VL
39-9000	Other personal care and service workers.....	2,648	3,252	604	-	22.8	-	17.5	839	-
39-9011	Child care workers.....	1,280	1,456	176	H	13.8	L	31.9	439	VH
39-9021	Personal and home care aides.....	701	988	287	VH	41.0	VH	4.5	230	H
39-9030	Recreation and fitness workers.....	514	623	109	-	21.2	-	6.7	119	-
39-9031	Fitness trainers and aerobics instructors...	205	260	55	L	27.1	VH	6.6	50	L
39-9032	Recreation workers.....	310	363	54	L	17.3	H	6.7	69	L
39-9041	Residential advisors.....	56	72	16	VL	28.9	VH	.0	22	VL
39-9099	Personal care and service workers, all other	96	112	15	VL	15.9	H	18.4	30	VL
<b>41-0000</b>	<b>Sales and related occupations.....</b>	<b>15,330</b>	<b>16,806</b>	<b>1,476</b>	<b>-</b>	<b>9.6</b>	<b>-</b>	<b>10.6</b>	<b>3,741</b>	<b>-</b>
41-1000	Supervisors, sales workers.....	2,183	2,256	74	-	3.4	-	33.2	267	-
41-1011	First-line supervisors/managers of retail sales workers.....	1,667	1,731	64	L	3.8	VL	31.9	229	H
41-1012	First-line supervisors/managers of non-retail sales workers.....	516	526	10	VL	1.9	VL	37.1	38	L
41-2000	Retail sales workers.....	8,445	9,382	937	-	11.1	-	2.2	2,727	-
41-2010	Cashiers.....	3,499	3,612	113	-	3.2	-	.9	1,223	-
41-2011	Cashiers, except gaming.....	3,470	3,578	108	H	3.1	VL	.9	1,211	VH
41-2012	Gaming change persons and booth cashiers	29	35	5	VL	18.5	VH	1.0	11	VL
41-2020	Counter and rental clerks and parts salespersons.....	690	778	88	-	12.8	-	.7	154	-
41-2021	Counter and rental clerks.....	451	555	104	H	23.1	VH	.8	126	H
41-2022	Parts salespersons.....	239	223	-16	VL	-6.6	VL	.5	28	VL
41-2031	Retail salespersons.....	4,256	4,992	736	VH	17.3	H	3.4	1,350	VH
41-3000	Sales representatives, services.....	1,318	1,467	149	-	11.3	-	13.0	171	-
41-3011	Advertising sales agents.....	154	180	25	L	16.3	H	5.7	24	VL
41-3021	Insurance sales agents.....	400	426	26	L	6.6	VL	24.3	44	L
41-3031	Securities, commodities, and financial services sales agents.....	281	313	32	L	11.5	L	12.5	37	L
41-3041	Travel agents.....	103	96	-6	VL	-6.1	VL	14.2	4	VL
41-3099	Sales representatives, services, all other.....	380	452	71	L	18.7	VH	5.4	61	L
41-4000	Sales representatives, wholesale and manufacturing.....	1,851	2,095	244	-	13.2	-	3.5	216	-
41-4011	Sales representatives, wholesale and manufacturing, technical and scientific products.....	397	454	57	L	14.4	H	3.5	47	L
41-4012	Sales representatives, wholesale and manufacturing, except technical and scientific products.....	1,454	1,641	187	H	12.9	L	3.5	169	H
41-9000	Other sales and related workers.....	1,533	1,606	72	-	4.7	-	35.3	360	-
41-9010	Models, demonstrators, and product promoters.....	120	140	20	-	16.5	-	17.9	33	-
41-9011	Demonstrators and product promoters.....	118	138	19	L	16.5	H	17.8	32	L
41-9012	Models.....	2	3	0	VL	15.7	H	26.3	1	VL
41-9020	Real estate brokers and sales agents.....	460	520	60	-	13.0	-	59.8	54	-
41-9021	Real estate brokers.....	111	120	9	VL	7.8	L	59.9	12	VL
41-9022	Real estate sales agents.....	348	400	51	L	14.7	H	59.8	41	L
41-9031	Sales engineers <sup>1</sup> .....	74	84	10	VL	14.0	L	.7	8	VL
41-9041	Telemarketers.....	415	373	-42	VL	-1.0	VL	.6	156	H
41-9090	Miscellaneous sales and related workers.....	465	489	24	-	5.1	-	46.5	109	-
41-9091	Door-to-door sales workers, news and street vendors, and related workers.....	239	221	-18	VL	-7.4	VL	91.8	56	L
41-9099	Sales and related workers, all other.....	226	267	42	L	18.4	H	9.1	53	L
<b>43-0000</b>	<b>Office and administrative support occupations.....</b>	<b>23,907</b>	<b>25,287</b>	<b>1,380</b>	<b>-</b>	<b>5.8</b>	<b>-</b>	<b>1.5</b>	<b>4,189</b>	<b>-</b>
43-1000	Supervisors, office and administrative support workers.....	1,482	1,602	120	-	8.1	-	1.5	167	-
43-1011	First-line supervisors/managers of office and administrative support workers.....	1,482	1,602	120	H	8.1	L	1.5	167	H
43-2000	Communications equipment operators.....	256	223	-33	-	-12.9	-	.3	38	-

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
		Dollars	Rank					High school or less	Some college	Bachelor's or higher	
Number	Rank										
1	VL	19,070	VL	H	VH	Short-term on-the-job training	HS/SC/C	20.4	46.8	32.8	39-6032
122	—	—	—	—	—	—	—	—	—	—	39-9000
52	VH	16,760	VL	H	VH	Short-term on-the-job training	HS/SC	52.2	34.0	13.7	39-9011
40	H	16,900	VL	VH	VH	Short-term on-the-job training	HS/SC	59.8	30.1	10.1	39-9021
23	—	—	—	—	—	—	—	—	—	—	39-9030
10	L	25,470	L	H	VH	Postsecondary vocational award	SC/C	18.8	29.4	51.7	39-9031
12	L	19,320	VL	H	VH	Short-term on-the-job training	SC/C	18.8	29.4	51.7	39-9032
3	VL	21,430	L	H	H	Moderate-term on-the-job training	HS/SC/C	35.2	36.2	28.7	39-9041
4	VL	17,950	VL	H	VH	Short-term on-the-job training	HS/SC/C	43.9	30.8	25.3	39-9099
<b>649</b>	—	—	—	—	—	—	—	—	—	—	<b>41-0000</b>
47	—	—	—	—	—	—	—	—	—	—	41-1000
36	H	32,720	H	VL	L	Work experience in a related occupation	HS/SC/C	40.8	34.3	24.9	41-1011
11	L	59,300	VH	VL	VL	Work experience in a related occupation	HS/SC/C	33.0	28.3	38.7	41-1012
444	—	—	—	—	—	—	—	—	—	—	41-2000
182	—	—	—	—	—	—	—	—	—	—	41-2010
180	VH	16,240	VL	VH	VH	Short-term on-the-job training	HS/SC	64.3	25.8	9.9	41-2011
2	VL	20,530	L	VH	VH	Short-term on-the-job training	HS/SC	64.3	25.8	9.9	41-2012
35	—	—	—	—	—	—	—	—	—	—	41-2020
28	H	18,280	VL	H	VH	Short-term on-the-job training	HS/SC	54.7	30.3	15.0	41-2021
7	VL	25,630	L	L	L	Moderate-term on-the-job training	HS/SC	62.4	32.2	5.4	41-2022
228	VH	18,680	VL	H	VH	Short-term on-the-job training	HS/SC/C	40.7	33.2	26.1	41-2031
41	—	—	—	—	—	—	—	—	—	—	41-3000
6	VL	40,300	H	H	L	Moderate-term on-the-job training	SC/C	15.0	30.2	54.8	41-3011
12	L	41,720	H	VL	L	Bachelor's degree	HS/SC/C	21.2	32.7	46.1	41-3021
6	VL	69,200	VH	L	VL	Bachelor's degree	SC/C	13.6	20.1	66.3	41-3031
2	VL	27,640	L	H	H	Postsecondary vocational award	HS/SC/C	20.3	47.3	32.5	41-3041
14	L	47,000	VH	H	L	Moderate-term on-the-job training	HS/SC/C	21.5	30.5	48.0	41-3099
73	—	—	—	—	—	—	—	—	—	—	41-4000
16	L	58,580	VH	L	L	Moderate-term on-the-job training	HS/SC/C	23.5	26.9	49.6	41-4011
57	VH	45,400	VH	L	L	Moderate-term on-the-job training	HS/SC/C	23.5	26.9	49.6	41-4012
44	—	—	—	—	—	—	—	—	—	—	41-9000
5	—	—	—	—	—	—	—	—	—	—	41-9010
5	VL	20,700	L	H	VH	Moderate-term on-the-job training	HS/SC/C	31.4	32.5	36.1	41-9011
0	VL	21,850	L	H	VH	Moderate-term on-the-job training	HS/SC/C	31.4	32.5	36.1	41-9012
15	—	—	—	—	—	—	—	—	—	—	41-9020
3	VL	58,720	VH	VL	L	Work experience in a related occupation	HS/SC/C	21.8	35.1	43.1	41-9021
12	L	35,670	H	VL	L	Postsecondary vocational award	HS/SC/C	21.8	35.1	43.1	41-9022
3	VL	70,620	VH	VL	VL	Bachelor's degree	C	4.8	9.6	85.7	41-9031
7	VL	20,420	L	VH	VH	Short-term on-the-job training	HS/SC	51.6	32.5	15.9	41-9041
14	—	—	—	—	—	—	—	—	—	—	41-9090
6	VL	22,570	L	H	VH	Short-term on-the-job training	HS/SC/C	40.7	32.5	26.8	41-9091
8	L	31,380	H	L	H	Moderate-term on-the-job training	HS/SC/C	21.2	26.2	52.6	41-9099
746	—	—	—	—	—	—	—	—	—	—	43-0000
44	—	—	—	—	—	—	—	—	—	—	43-1000
44	H	41,030	H	L	L	Work experience in a related occupation	HS/SC/C	33.4	37.7	28.9	43-1011
7	—	—	—	—	—	—	—	—	—	—	43-2000

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004-14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004-14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
43-2011	Switchboard operators, including answering service.....	213	195	-19	VL	-8.8	VL	.2	34	L
43-2021	Telephone operators.....	39	25	-14	VL	-35.7	VL	.4	3	VL
43-2099	Communications equipment operators, all other <sup>1,3</sup> .....	4	4	0	VL	-10.8	VL	.0	1	VL
43-3000	Financial clerks.....	3,891	4,203	312	-	8.0	-	4.1	602	-
43-3011	Bill and account collectors.....	456	554	98	H	21.4	VH	1.1	85	L
43-3021	Billing and posting clerks and machine operators.....	523	541	18	VL	3.4	VL	2.6	70	L
43-3031	Bookkeeping, accounting, and auditing clerks.....	2,046	2,166	120	H	5.9	VL	7.0	291	VH
43-3041	Gaming cage workers <sup>3</sup> .....	20	23	3	VL	17.0	H	.0	2	VL
43-3051	Payroll and timekeeping clerks.....	214	251	37	L	17.3	H	1.1	36	L
43-3061	Procurement clerks <sup>1,2</sup> .....	74	72	-2	VL	-2.7	VL	.0	10	VL
43-3071	Tellers.....	558	596	38	L	6.8	VL	.0	108	H
43-4000	Information and record clerks.....	5,554	6,212	657	-	11.8	-	.6	1,235	-
43-4011	Brokerage clerks <sup>1,3</sup> .....	75	81	6	VL	7.5	VL	.0	17	VL
43-4021	Correspondence clerks <sup>1,4</sup> .....	23	21	-2	VL	-6.9	VL	.0	5	VL
43-4031	Court, municipal, and license clerks.....	110	131	21	L	18.6	VH	2.9	13	VL
43-4041	Credit authorizers, checkers, and clerks.....	67	39	-27	VL	-41.2	VL	.0	5	VL
43-4051	Customer service representatives.....	2,063	2,534	471	VH	22.8	VH	.3	510	VH
43-4061	Eligibility interviewers, government programs.....	98	88	-9	VL	-9.4	VL	.2	10	VL
43-4071	File clerks.....	255	163	-93	VL	-36.3	VL	2.1	50	L
43-4081	Hotel, motel, and resort desk clerks.....	195	229	34	L	17.2	H	.4	62	L
43-4111	Interviewers, except eligibility and loan.....	199	251	52	L	26.0	VH	.2	43	L
43-4121	Library assistants, clerical.....	109	122	14	VL	12.5	L	.0	26	VL
43-4131	Loan interviewers and clerks.....	218	217	-1	VL	-.6	VL	2.3	36	L
43-4141	New accounts clerks.....	98	99	2	VL	1.7	VL	.0	7	VL
43-4151	Order clerks.....	293	230	-63	VL	-21.4	VL	.7	48	L
43-4161	Human resources assistants, except payroll and timekeeping.....	172	200	29	L	16.7	H	.1	28	VL
43-4171	Receptionists and information clerks.....	1,133	1,379	246	VH	21.7	VH	.8	299	VH
43-4181	Reservation and transportation ticket agents and travel clerks.....	163	167	4	VL	2.4	VL	1.4	30	L
43-4199	Information and record clerks, all other.....	285	260	-24	VL	-8.6	VL	.3	46	L
43-5000	Material recording, scheduling, dispatching, and distributing occupations.....	3,849	3,761	-88	-	-2.3	-	1.1	613	-
43-5011	Cargo and freight agents <sup>1,2</sup> .....	70	67	-4	VL	-5.6	VL	.0	12	VL
43-5021	Couriers and messengers.....	147	134	-13	VL	-8.6	VL	20.2	24	VL
43-5030	Dispatchers.....	266	291	25	-	9.4	-	1.4	32	-
43-5031	Police, fire, and ambulance dispatchers.....	95	111	15	VL	15.9	H	1.3	12	VL
43-5032	Dispatchers, except police, fire, and ambulance.....	171	181	10	VL	5.7	VL	1.5	19	VL
43-5041	Meter readers, utilities.....	50	27	-22	VL	-44.9	VL	.0	8	VL
43-5050	Postal service workers.....	619	619	0	-	.0	-	.0	34	-
43-5051	Postal service clerks <sup>1</sup> .....	75	75	0	VL	.0	VL	.0	4	VL
43-5052	Postal service mail carriers.....	335	335	0	VL	.0	VL	.0	19	VL
43-5053	Postal service mail sorters, processors, and processing machine operators.....	209	209	0	VL	.0	VL	.0	11	VL
43-5061	Production, planning, and expediting clerks.....	292	315	23	L	7.7	VL	1.2	24	VL
43-5071	Shipping, receiving, and traffic clerks.....	751	779	28	L	3.7	VL	.1	121	H
43-5081	Stock clerks and order fillers.....	1,566	1,451	-115	VL	-7.3	VL	.3	351	VH
43-5111	Weighers, measurers, checkers, and samplers, recordkeeping.....	88	78	-10	VL	-11.3	VL	2.2	7	VL
43-6000	Secretaries and administrative assistants.....	4,126	4,382	255	-	6.2	-	1.2	546	-
43-6011	Executive secretaries and administrative assistants.....	1,547	1,739	192	H	12.4	L	1.2	218	H
43-6012	Legal secretaries.....	272	319	47	L	17.4	H	1.2	41	L
43-6013	Medical secretaries.....	373	436	63	L	17.0	H	1.1	55	L
43-6014	Secretaries, except legal, medical, and executive.....	1,934	1,887	-48	VL	-2.5	VL	1.2	231	H
43-9000	Other office and administrative support workers.....	4,748	4,905	157	-	3.3	-	1.0	988	-
43-9011	Computer operators.....	149	101	-49	VL	-32.6	VL	1.9	13	VL

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
		Dollars	Rank					High school or less	Some college	Bachelor's or higher	
Number	Rank										
5	VL	21,580	L	H	H	Short-term on-the-job training	HS/SC	44.2	46.2	9.6	43-2011
1	VL	28,400	L	VH	L	Short-term on-the-job training	HS/SC	47.5	41.1	11.3	43-2021
0	VL	31,680	H	H	H	Short-term on-the-job training	HS/SC	30.3	5.0	19.7	43-2099
123	—	—	—	—	—	—	—	—	—	—	43-3000
18	L	27,450	L	H	L	Short-term on-the-job training	HS/SC	45.9	39.4	14.7	43-3011
11	L	27,040	L	L	H	Moderate-term on-the-job training	HS/SC	39.2	45.7	15.1	43-3021
50	H	28,570	L	L	H	Moderate-term on-the-job training	HS/SC	37.7	44.9	17.4	43-3031
1	VL	22,330	L	VL	H	Short-term on-the-job training	HS/SC	53.1	38.7	8.2	43-3041
9	L	30,350	H	VL	H	Moderate-term on-the-job training	HS/SC	35.2	47.3	17.6	43-3051
2	VL	30,890	H	L	VL	Short-term on-the-job training	HS/SC	58.7	30.9	10.4	43-3061
31	H	21,120	L	L	VH	Short-term on-the-job training	HS/SC	45.8	40.7	13.4	43-3071
204	—	—	—	—	—	—	—	—	—	—	43-4000
2	VL	35,240	H	H	L	Moderate-term on-the-job training	HS/SC/C	30.6	42.4	27.0	43-4011
1	VL	28,090	L	VL	L	Short-term on-the-job training	HS/SC/C	30.3	43.0	26.7	43-4021
4	VL	28,430	L	VL	L	Short-term on-the-job training	HS/SC	40.7	41.0	18.3	43-4031
1	VL	29,050	H	L	L	Short-term on-the-job training	HS/SC/C	27.7	51.9	20.4	43-4041
78	VH	27,020	L	H	H	Moderate-term on-the-job training	HS/SC/C	36.9	40.8	22.3	43-4051
3	VL	33,110	H	VL	VL	Moderate-term on-the-job training	HS/SC/C	22.1	43.2	34.7	43-4061
8	L	21,030	L	H	VH	Short-term on-the-job training	HS/SC	41.1	42.2	16.7	43-4071
12	L	17,700	VL	VH	VH	Short-term on-the-job training	HS/SC	45.5	39.0	15.5	43-4081
10	L	23,670	L	VH	VH	Short-term on-the-job training	HS/SC	29.1	53.5	17.4	43-4111
6	VL	20,720	L	L	VH	Short-term on-the-job training	HS/SC/C	20.8	46.8	32.4	43-4121
3	VL	29,000	H	L	L	Short-term on-the-job training	HS/SC/C	30.7	46.8	22.6	43-4131
3	VL	26,860	L	VL	L	Work experience in a related occupation	HS/SC	28.3	55.8	15.9	43-4141
7	VL	25,110	L	H	H	Short-term on-the-job training	HS/SC	46.9	37.8	15.3	43-4151
7	VL	31,750	H	L	L	Short-term on-the-job training	HS/SC/C	28.4	42.8	28.8	43-4161
52	VH	21,830	L	H	VH	Short-term on-the-job training	HS/SC	47.2	39.4	13.5	43-4171
5	VL	27,750	L	L	H	Short-term on-the-job training	HS/SC/C	31.0	45.9	23.1	43-4181
4	VL	32,110	H	VL	L	Short-term on-the-job training	HS/SC/C	29.2	47.6	23.1	43-4199
120	—	—	—	—	—	—	—	—	—	—	43-5000
2	VL	34,250	H	L	VL	Moderate-term on-the-job training	HS/SC	47.6	38.2	14.2	43-5011
3	VL	20,190	L	H	H	Short-term on-the-job training	HS/SC	51.6	36.1	12.3	43-5021
8	—	—	—	—	—	—	—	—	—	—	43-5030
4	VL	28,930	H	L	L	Moderate-term on-the-job training	HS/SC	45.0	43.9	11.1	43-5031
5	VL	30,920	H	L	L	Moderate-term on-the-job training	HS/SC	45.0	43.9	11.1	43-5032
2	VL	29,440	H	VL	VL	Short-term on-the-job training	HS/SC	6.0	36.3	3.7	43-5041
18	—	—	—	—	—	—	—	—	—	—	43-5050
2	VL	40,950	H	VL	VL	Short-term on-the-job training	HS/SC	46.7	40.9	12.4	43-5051
11	L	44,450	VH	VL	VL	Short-term on-the-job training	HS/SC	52.0	37.6	10.4	43-5052
6	VL	39,430	H	L	VL	Short-term on-the-job training	HS/SC	45.5	40.7	13.8	43-5053
9	L	36,340	H	H	L	Short-term on-the-job training	HS/SC/C	35.3	36.1	28.7	43-5061
18	L	24,400	L	H	L	Short-term on-the-job training	HS/SC	65.7	26.9	7.4	43-5071
58	VH	20,100	VL	VH	H	Short-term on-the-job training	HS/SC	62.9	28.7	8.4	43-5081
2	VL	24,570	L	H	L	Short-term on-the-job training	HS/SC	58.8	28.8	12.4	43-5111
109	—	—	—	—	—	—	—	—	—	—	43-6000
49	H	34,970	H	L	H	Moderate-term on-the-job training	HS/SC	36.1	46.4	17.5	43-6011
10	L	36,720	H	L	H	Postsecondary vocational award	HS/SC	36.1	46.4	17.5	43-6012
13	L	26,540	L	L	H	Postsecondary vocational award	HS/SC	36.1	46.4	17.5	43-6013
37	H	26,110	L	L	H	Moderate-term on-the-job training	HS/SC	36.1	46.4	17.5	43-6014
138	—	—	—	—	—	—	—	—	—	—	43-9000
3	VL	31,070	H	L	L	Moderate-term on-the-job training	HS/SC/C	33.0	42.5	24.4	43-9011

See footnotes at end of table.

**Table IV–1. Occupational employment and job openings data, 2004–14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004–14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004–14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
43-9020	Data entry and information processing workers	525	493	-32	–	-6.1	–	3.2	115	–
43-9021	Data entry keyers .....	330	328	-2	VL	-7	VL	1.0	85	L
43-9022	Word processors and typists .....	194	165	-30	VL	-15.3	VL	7.5	30	L
43-9031	Desktop publishers <sup>1,3</sup> .....	34	41	8	VL	23.2	VH	1.1	8	VL
43-9041	Insurance claims and policy processing clerks	251	262	11	VL	4.5	VL	.1	36	L
43-9051	Mail clerks and mail machine operators, except postal service .....	160	101	-59	VL	-37.1	VL	.0	33	L
43-9061	Office clerks, general.....	3,138	3,401	263	VH	8.4	L	.4	695	VH
43-9071	Office machine operators, except computer....	100	78	-22	VL	-21.9	VL	.4	19	VL
43-9081	Proofreaders and copy markers <sup>1,2</sup> .....	23	24	0	VL	1.7	VL	10.5	5	VL
43-9111	Statistical assistants <sup>2</sup> .....	19	20	1	VL	5.7	VL	.0	1	VL
43-9199	Office and administrative support workers, all other.....	349	384	35	L	1.0	L	3.1	63	L
<b>45-0000</b>	<b>Farming, fishing, and forestry occupations.....</b>	<b>1,026</b>	<b>1,013</b>	<b>-13</b>	<b>–</b>	<b>-1.3</b>	<b>–</b>	<b>7.1</b>	<b>195</b>	<b>–</b>
45-1000	Supervisors, farming, fishing, and forestry workers <sup>1</sup> .....	61	63	2	–	3.6	–	21.3	11	–
45-2000	Agricultural workers .....	834	824	-10	–	-1.2	–	1.5	160	–
45-2011	Agricultural inspectors <sup>1,2</sup> .....	14	15	1	VL	6.8	VL	.0	3	VL
45-2021	Animal breeders <sup>5</sup> .....	12	12	1	VL	5.6	VL	83.8	1	VL
45-2041	Graders and sorters, agricultural products .....	45	49	4	VL	7.9	L	.5	4	VL
45-2090	Miscellaneous agricultural workers .....	764	749	-15	–	-2.0	–	.2	152	–
45-2091	Agricultural equipment operators.....	60	60	0	VL	-1	VL	.2	12	VL
45-2092	Farmworkers and laborers, crop, nursery, and greenhouse.....	611	595	-16	VL	-2.7	VL	.2	121	H
45-2093	Farmworkers, farm and ranch animals.....	79	80	1	VL	.9	VL	.2	16	VL
45-2099	Agricultural workers, all other .....	14	15	1	VL	4.3	VL	.1	3	VL
45-3000	Fishing and hunting workers .....	39	33	-7	–	-16.6	–	52.0	7	–
45-3011	Fishers and related fishing workers.....	38	32	-7	VL	-17.2	VL	52.1	6	VL
45-3021	Hunters and trappers <sup>1,5</sup> .....	1	1	0	VL	5.2	VL	49.0	0	VL
45-4000	Forest, conservation, and logging workers.....	92	93	1	–	1.6	–	31.0	18	–
45-4011	Forest and conservation workers <sup>2</sup> .....	17	18	1	VL	6.0	VL	25.2	2	VL
45-4020	Logging workers .....	75	75	0	–	.6	–	32.4	15	–
45-4021	Fallers.....	15	14	-1	VL	-5.7	VL	34.6	3	VL
45-4022	Logging equipment operators.....	43	45	1	VL	3.4	VL	31.7	9	VL
45-4023	Log graders and scalers.....	9	9	0	VL	1.7	VL	42.3	2	VL
45-4029	Logging workers, all other .....	7	7	0	VL	-4.2	VL	19.9	1	VL
<b>47-0000</b>	<b>Construction and extraction occupations .....</b>	<b>7,738</b>	<b>8,669</b>	<b>931</b>	<b>–</b>	<b>12.0</b>	<b>–</b>	<b>18.2</b>	<b>1,209</b>	<b>–</b>
47-1000	Supervisors, construction and extraction workers	750	832	82	–	10.9	–	24.7	57	–
47-1011	First-line supervisors/managers of construction trades and extraction workers.....	750	832	82	H	10.9	L	24.7	57	L
47-2000	Construction trades and related workers.....	5,929	6,627	699	–	11.8	–	2.0	969	–
47-2011	Boilermakers <sup>2</sup> .....	19	20	2	VL	8.7	L	.0	2	VL
47-2020	Brickmasons, blockmasons, and stonemasons	177	198	21	–	12.1	–	27.9	19	–
47-2021	Brickmasons and blockmasons .....	155	174	19	L	12.0	L	28.6	17	VL
47-2022	Stonemasons .....	22	25	3	VL	13.0	L	23.1	2	VL
47-2031	Carpenters.....	1,349	1,535	186	H	13.8	L	32.4	210	H
47-2040	Carpet, floor, and tile installers and finishers...	184	209	25	–	13.4	–	39.0	26	–
47-2041	Carpet installers .....	79	86	7	VL	8.4	L	46.4	11	VL
47-2042	Floor layers, except carpet, wood, and hard tiles.....	31	34	3	VL	10.2	L	44.7	4	VL
47-2043	Floor sanders and finishers .....	15	16	1	VL	8.2	L	53.0	2	VL
47-2044	Tile and marble setters .....	59	73	14	VL	22.9	VH	24.4	9	VL
47-2050	Cement masons, concrete finishers, and terrazzo workers .....	208	241	33	–	15.9	–	3.1	33	–
47-2051	Cement masons and concrete finishers .....	201	233	32	L	15.9	H	3.1	32	L
47-2053	Terrazzo workers and finishers.....	7	8	1	VL	15.2	H	3.4	1	VL
47-2061	Construction laborers .....	1,009	1,069	60	L	5.9	VL	12.9	245	H
47-2070	Construction equipment operators .....	449	504	55	–	12.2	–	4.7	44	–
47-2071	Paving, surfacing, and tamping equipment operators <sup>1</sup> .....	63	73	10	VL	15.6	H	1.2	7	VL

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code	
		Dollars	Rank					High school or less	Some college	Bachelor's or higher		
Number	Rank											
12	-	-	-	-	-	-	-	-	-	-	-	43-9020
8	L	23,250	L	VH	H	Moderate-term on-the-job training	HS/SC	43.6	40.8	15.5	-	43-9021
4	VL	28,030	L	H	H	Moderate-term on-the-job training	HS/SC	38.9	46.3	14.8	-	43-9022
2	VL	32,340	H	L	H	Postsecondary vocational award	HS/SC/C	30.5	27.7	41.8	-	43-9031
5	VL	29,240	H	L	L	Moderate-term on-the-job training	HS/SC	35.8	44.7	19.5	-	43-9041
5	VL	22,380	L	H	H	Short-term on-the-job training	HS/SC	57.0	34.0	8.9	-	43-9051
96	VH	22,770	L	H	VH	Short-term on-the-job training	HS/SC	38.6	41.6	19.8	-	43-9061
3	VL	23,210	L	H	H	Short-term on-the-job training	HS/SC	62.2	26.0	11.8	-	43-9071
1	VL	25,330	L	H	H	Short-term on-the-job training	HS/SC/C	34.2	29.9	35.9	-	43-9081
0	VL	30,270	H	L	L	Moderate-term on-the-job training	HS/SC/C	34.7	34.5	30.7	-	43-9111
12	L	25,410	L	L	H	Short-term on-the-job training	HS/SC/C	29.4	38.2	32.4	-	43-9199
<b>29</b>	-	-	-	-	-	-	-	-	-	-	-	<b>45-0000</b>
1	-	33,720	H	VL	VL	Work experience in a related occupation	HS	69.0	18.8	12.2	-	45-1000
24	-	-	-	-	-	-	-	-	-	-	-	45-2000
0	VL	31,040	H	VH	VL	Work experience in a related occupation	HS/SC/C	31.6	30.1	38.3	-	45-2011
0	VL	28,180	L	L	VH	Short-term on-the-job training	HS	83.6	11.4	5.1	-	45-2021
2	VL	16,430	VL	VH	VL	Work experience in a related occupation	HS	86.2	9.9	3.9	-	45-2041
22	-	-	-	-	-	-	-	-	-	-	-	45-2090
2	VL	18,460	VL	VH	L	Moderate-term on-the-job training	HS	84.8	11.2	4.1	-	45-2091
17	L	16,030	VL	VH	L	Short-term on-the-job training	HS	84.8	11.2	4.1	-	45-2092
2	VL	17,270	VL	VH	L	Short-term on-the-job training	HS	84.8	11.2	4.1	-	45-2093
0	VL	21,120	L	VH	L	Short-term on-the-job training	HS	84.8	11.2	4.1	-	45-2099
1	-	-	-	-	-	-	-	-	-	-	-	45-3000
1	VL	24,100	L	VH	L	Moderate-term on-the-job training	HS	73.2	16.8	1.0	-	45-3011
0	VL	26,730	L	VH	L	Moderate-term on-the-job training	HS	80.9	14.2	4.9	-	45-3021
2	-	-	-	-	-	-	-	-	-	-	-	45-4000
1	VL	19,780	VL	VH	L	Moderate-term on-the-job training	HS	78.2	13.3	8.4	-	45-4011
2	-	-	-	-	-	-	-	-	-	-	-	45-4020
0	VL	27,530	L	H	L	Moderate-term on-the-job training	HS	84.1	14.0	1.9	-	45-4021
1	VL	27,410	L	H	L	Moderate-term on-the-job training	HS	84.1	14.0	1.9	-	45-4022
0	VL	25,560	L	H	L	Moderate-term on-the-job training	HS	84.1	14.0	1.9	-	45-4023
0	VL	29,730	H	H	L	Moderate-term on-the-job training	HS	84.1	14.0	1.9	-	45-4029
<b>246</b>	-	-	-	-	-	-	-	-	-	-	-	<b>47-0000</b>
21	-	-	-	-	-	-	-	-	-	-	-	47-1000
21	L	50,450	VH	L	VL	Work experience in a related occupation	HS/SC	65.2	24.6	10.2	-	47-1011
178	-	-	-	-	-	-	-	-	-	-	-	47-2000
1	VL	45,100	VH	VH	VL	Long-term on-the-job training	HS/SC	71.8	25.5	2.7	-	47-2011
5	-	-	-	-	-	-	-	-	-	-	-	47-2020
4	VL	41,740	H	VH	L	Long-term on-the-job training	HS	79.0	17.3	3.7	-	47-2021
1	VL	34,980	H	VH	L	Long-term on-the-job training	HS	79.0	17.3	3.7	-	47-2022
41	H	34,900	H	VH	VL	Long-term on-the-job training	HS/SC	73.3	20.7	6.0	-	47-2031
5	-	-	-	-	-	-	-	-	-	-	-	47-2040
2	VL	34,090	H	H	L	Moderate-term on-the-job training	HS	77.7	19.1	3.2	-	47-2041
1	VL	32,600	H	H	L	Moderate-term on-the-job training	HS	77.7	19.1	3.2	-	47-2042
0	VL	26,790	L	H	L	Moderate-term on-the-job training	HS	77.7	19.1	3.2	-	47-2043
2	VL	35,410	H	H	L	Long-term on-the-job training	HS	77.7	19.1	3.2	-	47-2044
7	-	-	-	-	-	-	-	-	-	-	-	47-2050
7	VL	31,400	H	VH	VL	Moderate-term on-the-job training	HS	82.9	14.3	2.8	-	47-2051
0	VL	27,980	L	VH	VL	Long-term on-the-job training	HS	82.9	14.3	2.8	-	47-2053
19	L	25,160	L	VH	L	Moderate-term on-the-job training	HS	80.1	14.4	5.5	-	47-2061
16	-	-	-	-	-	-	-	-	-	-	-	47-2070
2	VL	29,990	H	VH	VL	Moderate-term on-the-job training	HS	87.6	12.4	.0	-	47-2071

See footnotes at end of table.

**Table IV–1. Occupational employment and job openings data, 2004–14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004–14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004–14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
47-2072	Pile-driver operators <sup>1,5</sup> .....	4	5	1	VL	11.9	L	.0	0	VL
47-2073	Operating engineers and other construction equipment operators.....	382	426	44	L	11.6	L	5.4	37	L
47-2080	Drywall installers, ceiling tile installers, and tapers.....	196	212	16	–	8.3	–	22.9	22	–
47-2081	Drywall and ceiling tile installers.....	149	162	13	VL	9.0	L	23.4	17	VL
47-2082	Tapers.....	47	50	3	VL	5.9	VL	21.0	5	VL
47-2111	Electricians.....	656	734	77	L	11.8	L	9.5	68	L
47-2121	Glaziers <sup>1</sup> .....	49	56	7	VL	14.2	H	11.0	9	VL
47-2130	Insulation workers.....	61	63	1	–	2.4	–	9.7	6	–
47-2131	Insulation workers, floor, ceiling, and wall....	42	44	1	VL	3.0	VL	11.0	4	VL
47-2132	Insulation workers, mechanical.....	19	19	0	VL	1.0	VL	6.8	2	VL
47-2140	Painters and paperhangers.....	486	546	60	–	12.4	–	44.6	105	–
47-2141	Painters, construction and maintenance.....	471	531	60	L	12.6	L	44.6	102	L
47-2142	Paperhangers <sup>1,2</sup> .....	14	15	0	VL	3.2	VL	43.9	3	VL
47-2150	Pipelayers, plumbers, pipefitters, and steamfitters.....	561	645	84	–	15.0	–	13.2	69	–
47-2151	Pipelayers.....	62	69	6	VL	9.9	L	11.9	7	VL
47-2152	Plumbers, pipefitters, and steamfitters.....	499	577	78	H	15.7	H	13.3	61	L
47-2161	Plasterers and stucco masons.....	59	64	5	VL	8.2	L	5.0	6	VL
47-2171	Reinforcing iron and rebar workers <sup>1,3</sup> .....	34	38	5	VL	14.1	L	2.3	6	VL
47-2181	Roofers.....	162	189	27	L	16.8	H	23.8	38	L
47-2211	Sheet metal workers.....	198	222	24	L	12.2	L	4.9	50	L
47-2221	Structural iron and steel workers.....	73	83	11	VL	15.0	H	2.3	13	VL
47-3000	Helpers, construction trades.....	431	480	49	–	11.4	–	.8	93	–
47-3010	Helpers, construction trades.....	431	480	49	–	11.4	–	.8	93	–
47-3011	Helpers—Brickmasons, blockmasons, stonemasons, and tile and marble setters.....	62	71	9	VL	14.9	H	.8	14	VL
47-3012	Helpers—Carpenters.....	109	125	16	VL	14.5	H	.7	24	VL
47-3013	Helpers—Electricians.....	95	99	4	VL	4.0	VL	.9	19	VL
47-3014	Helpers—Painters, paperhangers, plasterers, and stucco masons.....	27	30	3	VL	11.5	L	.9	6	VL
47-3015	Helpers—Pipelayers, plumbers, pipefitters, and steamfitters.....	76	89	13	VL	16.6	H	.8	17	VL
47-3016	Helpers—Roofers.....	22	26	4	VL	16.5	H	.7	5	VL
47-3019	Helpers, construction trades, all other.....	39	40	1	VL	1.8	VL	.8	8	VL
47-4000	Other construction and related workers.....	460	562	102	–	22.2	–	7.6	65	–
47-4011	Construction and building inspectors.....	94	115	21	L	22.3	VH	10.2	6	VL
47-4021	Elevator installers and repairers <sup>1</sup> .....	22	25	3	VL	14.8	H	.4	3	VL
47-4031	Fence erectors <sup>1</sup> .....	38	42	4	VL	9.9	L	34.6	5	VL
47-4041	Hazardous materials removal workers.....	38	50	12	VL	31.2	VH	.0	11	VL
47-4051	Highway maintenance workers.....	143	177	33	L	23.3	VH	1.2	27	VL
47-4061	Rail-track laying and maintenance equipment operators <sup>3</sup> .....	11	10	-1	VL	-10.8	VL	.0	1	VL
47-4071	Septic tank servicers and sewer pipe cleaners <sup>1,3</sup> .....	20	24	4	VL	21.8	VH	12.9	3	VL
47-4090	Miscellaneous construction and related workers.....	94	119	26	–	27.3	–	9.5	9	–
47-4091	Segmental pavers.....	1	1	0	VL	12.6	L	31.4	0	VL
47-4099	Construction and related workers, all other..	92	118	25	L	27.5	VH	9.3	9	VL
47-5000	Extraction workers.....	169	169	-1	–	-4	–	2.9	25	–
47-5010	Derrick, rotary drill, and service unit operators, oil, gas, and mining.....	47	47	0	–	-3	–	2.7	4	–
47-5011	Derrick operators, oil and gas.....	15	15	0	VL	-5	VL	3.0	1	VL
47-5012	Rotary drill operators, oil and gas.....	15	15	0	VL	.1	VL	2.8	1	VL
47-5013	Service unit operators, oil, gas, and mining..	17	17	0	VL	-6	VL	2.3	1	VL
47-5021	Earth drillers, except oil and gas.....	22	23	2	VL	7.9	L	10.5	4	VL
47-5031	Explosives workers, ordnance handling experts, and blasters <sup>1,3</sup> .....	5	6	0	VL	2.2	VL	.0	1	VL
47-5040	Mining machine operators.....	15	14	-1	–	-9.6	–	.6	1	–
47-5041	Continuous mining machine operators.....	8	7	-1	VL	-12.4	VL	.5	1	VL

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
		Dollars	Rank					High school or less	Some college	Bachelor's or higher	
Number	Rank										
0	VL	44,290	VH	VH	VL	Moderate-term on-the-job training	HS	77.8	19.8	2.4	47-2072
14	L	35,360	H	VH	VL	Moderate-term on-the-job training	HS/SC	77.5	20.1	2.4	47-2073
6	-	-	-	-	-	-	-	-	-	-	47-2080
5	VL	34,030	H	VH	VL	Moderate-term on-the-job training	HS	84.8	13.2	2.0	47-2081
1	VL	39,070	H	VH	VL	Moderate-term on-the-job training	HS	84.8	13.2	2.0	47-2082
21	L	42,300	H	H	VL	Long-term on-the-job training	HS/SC	51.4	42.8	5.8	47-2111
2	VL	32,650	H	H	VL	Long-term on-the-job training	HS/SC	69.7	27.0	3.3	47-2121
2	-	31,400	H	-	-	-	-	-	-	-	47-2130
1	VL	30,310	H	H	VL	Moderate-term on-the-job training	HS/SC	76.0	20.9	3.1	47-2131
1	VL	33,330	H	H	VL	Moderate-term on-the-job training	HS/SC	76.0	20.9	3.1	47-2132
13	-	-	-	-	-	-	-	-	-	-	47-2140
13	L	30,260	H	VH	L	Moderate-term on-the-job training	HS	74.7	18.3	7.0	47-2141
0	VL	32,730	H	VL	H	Moderate-term on-the-job training	HS/SC	64.8	32.9	2.4	47-2142
21	-	-	-	-	-	-	-	-	-	-	47-2150
2	VL	28,450	L	H	VL	Moderate-term on-the-job training	HS/SC	66.9	27.7	5.4	47-2151
19	L	41,290	H	H	VL	Long-term on-the-job training	HS/SC	66.9	27.7	5.4	47-2152
2	VL	32,440	H	VH	L	Long-term on-the-job training	HS	84.6	14.9	.5	47-2161
1	VL	35,160	H	VH	VL	Long-term on-the-job training	HS	8.0	15.3	4.7	47-2171
6	VL	30,840	H	VH	L	Moderate-term on-the-job training	HS	87.6	9.8	2.5	47-2181
7	VL	35,560	H	VH	VL	Long-term on-the-job training	HS/SC	67.3	30.7	2.0	47-2211
3	VL	42,430	H	VH	VL	Long-term on-the-job training	HS/SC	65.8	30.4	3.8	47-2221
23	-	-	-	-	-	-	-	-	-	-	47-3000
23	-	-	-	-	-	-	-	-	-	-	47-3010
4	VL	24,950	L	VH	L	Short-term on-the-job training	HS	86.6	11.0	2.4	47-3011
6	VL	21,590	L	VH	L	Short-term on-the-job training	HS	86.6	11.0	2.4	47-3012
4	VL	23,420	L	VH	L	Short-term on-the-job training	HS	86.6	11.0	2.4	47-3013
1	VL	20,540	L	VH	L	Short-term on-the-job training	HS	86.6	11.0	2.4	47-3014
4	VL	22,360	L	VH	L	Short-term on-the-job training	HS	86.6	11.0	2.4	47-3015
1	VL	20,660	L	VH	L	Short-term on-the-job training	HS	86.6	11.0	2.4	47-3016
2	VL	20,620	L	VH	L	Short-term on-the-job training	HS	86.6	11.0	2.4	47-3019
19	-	-	-	-	-	-	-	-	-	-	47-4000
4	VL	43,670	VH	VL	VL	Work experience in a related occupation	HS/SC/C	32.9	35.7	31.4	47-4011
1	VL	58,710	VH	L	VL	Long-term on-the-job training	HS/SC	75.1	22.8	2.1	47-4021
1	VL	23,380	L	VH	VL	Moderate-term on-the-job training	HS	90.6	9.4	.0	47-4031
2	VL	33,320	H	VH	VL	Moderate-term on-the-job training	HS/SC	68.9	25.6	5.4	47-4041
5	VL	29,550	H	H	VL	Moderate-term on-the-job training	HS/SC	77.6	21.6	.8	47-4051
0	VL	38,160	H	VH	VL	Moderate-term on-the-job training	HS/SC	62.0	33.8	4.2	47-4061
1	VL	28,870	H	H	VL	Moderate-term on-the-job training	HS/SC	68.8	25.8	5.3	47-4071
4	-	-	-	-	-	-	-	-	-	-	47-4090
0	VL	24,430	L	H	L	Moderate-term on-the-job training	HS/SC	74.6	2.0	5.4	47-4091
4	VL	23,720	L	H	L	Moderate-term on-the-job training	HS/SC	74.6	2.0	5.4	47-4099
5	-	-	-	-	-	-	-	-	-	-	47-5000
1	-	-	-	-	-	-	-	-	-	-	47-5010
0	VL	33,510	H	H	VL	Moderate-term on-the-job training	HS/SC	77.0	22.9	.1	47-5011
0	VL	35,590	H	H	VL	Moderate-term on-the-job training	HS/SC	77.0	22.9	.1	47-5012
1	VL	30,670	H	H	VL	Moderate-term on-the-job training	HS/SC	77.0	22.9	.1	47-5013
1	VL	33,420	H	H	VL	Moderate-term on-the-job training	HS	78.7	18.0	3.2	47-5021
0	VL	35,700	H	H	VL	Moderate-term on-the-job training	HS	76.9	16.6	6.5	47-5031
0	-	-	-	-	-	-	-	-	-	-	47-5040
0	VL	37,170	H	H	VL	Moderate-term on-the-job training	HS/SC	73.8	21.7	4.5	47-5041

See footnotes at end of table.

**Table IV–1. Occupational employment and job openings data, 2004–14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004–14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004–14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
47-5042	Mine cutting and channeling machine operators.....	4	4	0	VL	-11.1	VL	.7	0	VL
47-5049	Mining machine operators, all other .....	3	3	0	VL	.9	VL	.7	0	VL
47-5051	Rock splitters, quarry.....	3	4	0	VL	4.1	VL	5.8	1	VL
47-5061	Roof bolters, mining <sup>1,5</sup> .....	4	3	-1	VL	-29.5	VL	.0	1	VL
47-5071	Roustabouts, oil and gas <sup>1,5</sup> .....	34	34	0	VL	1.0	VL	.0	6	VL
47-5081	Helpers—Extraction workers <sup>1,5</sup> .....	27	27	0	VL	-1	VL	.0	4	VL
47-5099	Extraction workers, all other .....	12	12	0	VL	-7	VL	7.7	3	VL
<b>49-0000</b>	<b>Installation, maintenance, and repair occupations.....</b>	<b>5,747</b>	<b>6,404</b>	<b>657</b>	<b>-</b>	<b>11.4</b>	<b>-</b>	<b>6.9</b>	<b>685</b>	<b>-</b>
49-1000	Supervisors of installation, maintenance, and repair workers .....	469	527	58	-	12.4	-	.3	33	-
49-1011	First-line supervisors/managers of mechanics, installers, and repairers .....	469	527	58	L	12.4	L	.3	33	L
49-2000	Electrical and electronic equipment mechanics, installers, and repairers .....	664	686	22	-	3.3	-	9.2	92	-
49-2011	Computer, automated teller, and office machine repairers .....	168	174	6	VL	3.8	VL	13.7	31	L
49-2020	Radio and telecommunications equipment installers and repairers .....	222	211	-11	-	-4.8	-	6.6	21	-
49-2021	Radio mechanics.....	7	7	0	VL	-1.1	VL	6.2	1	VL
49-2022	Telecommunications equipment installers and repairers, except line installers ....	215	204	-10	VL	-4.9	VL	6.6	21	VL
49-2090	Miscellaneous electrical and electronic equipment mechanics, installers, and repairers.....	275	301	26	-	9.6	-	8.5	40	-
49-2091	Avionics technicians <sup>1,2</sup> .....	23	25	2	VL	9.1	L	.0	2	VL
49-2092	Electric motor, power tool, and related repairers.....	28	29	1	VL	4.1	VL	21.2	3	VL
49-2093	Electrical and electronics installers and repairers, transportation equipment <sup>1,5</sup> .....	18	19	1	VL	6.6	VL	.0	2	VL
49-2094	Electrical and electronics repairers, commercial and industrial equipment <sup>1,3</sup> .....	72	79	7	VL	9.7	L	.0	8	VL
49-2095	Electrical and electronics repairers, powerhouse, substation, and relay <sup>1,3</sup> .....	21	21	0	VL	-4	VL	.0	2	VL
49-2096	Electronic equipment installers and repairers, motor vehicles .....	19	21	3	VL	13.6	L	16.5	1	VL
49-2097	Electronic home entertainment equipment installers and repairers .....	47	49	2	VL	4.7	VL	30.7	6	VL
49-2098	Security and fire alarm systems installers ....	47	57	10	VL	21.7	VH	1.5	15	VL
49-3000	Vehicle and mobile equipment mechanics, installers, and repairers .....	1,778	2,012	234	-	13.2	-	11.2	220	-
49-3011	Aircraft mechanics and service technicians.....	119	135	16	VL	13.4	L	3.0	11	VL
49-3020	Automotive technicians and repairers .....	1,026	1,175	150	-	14.6	-	15.4	113	-
49-3021	Automotive body and related repairers.....	201	221	21	L	10.3	L	17.6	18	VL
49-3022	Automotive glass installers and repairers.....	22	26	3	VL	15.1	H	16.6	2	VL
49-3023	Automotive service technicians and mechanics.....	803	929	126	H	15.7	H	14.8	93	L
49-3031	Bus and truck mechanics and diesel engine specialists .....	270	309	39	L	14.4	H	5.3	32	L
49-3040	Heavy vehicle and mobile equipment service technicians and mechanics.....	178	189	12	-	6.7	-	2.9	20	-
49-3041	Farm equipment mechanics .....	33	34	1	VL	3.3	VL	3.2	3	VL
49-3042	Mobile heavy equipment mechanics, except engines .....	125	136	11	VL	8.8	L	2.9	14	VL
49-3043	Rail car repairers .....	20	20	0	VL	-1.2	VL	2.1	2	VL
49-3050	Small engine mechanics .....	73	83	10	-	14.2	-	18.2	22	-
49-3051	Motorboat mechanics .....	23	26	3	VL	15.1	H	18.9	7	VL
49-3052	Motorcycle mechanics .....	19	22	3	VL	13.7	L	15.7	6	VL
49-3053	Outdoor power equipment and other small engine mechanics.....	31	36	4	VL	14.0	L	19.2	10	VL
49-3090	Miscellaneous vehicle and mobile equipment mechanics, installers, and repairers ...	112	120	8	-	6.9	-	3.4	22	-

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
		Dollars	Rank					High school or less	Some college	Bachelor's or higher	
Number	Rank										
0	VL	37,360	H	H	VL	Moderate-term on-the-job training	HS/SC	73.8	21.7	4.5	47-5042
0	VL	34,220	H	H	VL	Moderate-term on-the-job training	HS/SC	73.8	21.7	4.5	47-5049
0	VL	26,080	L	VH	VL	Moderate-term on-the-job training	HS	87.2	12.0	.8	47-5051
0	VL	38,890	H	H	VL	Moderate-term on-the-job training	HS	79.0	18.4	2.6	47-5061
1	VL	24,840	L	VH	VL	Moderate-term on-the-job training	HS	79.0	18.4	2.6	47-5071
1	VL	26,320	L	VH	VL	Short-term on-the-job training	HS	79.0	18.4	2.6	47-5081
0	VL	32,570	H	VH	VL	Moderate-term on-the-job training	HS	87.2	12.0	.8	47-5099
<b>198</b>	-	-	-	-	-	-	-	-	-	-	<b>49-0000</b>
18	-	-	-	-	-	-	-	-	-	-	49-1000
18	L	50,340	VH	VL	VL	Work experience in a related occupation	HS/SC	46.1	41.6	12.3	49-1011
16	-	-	-	-	-	-	-	-	-	-	49-2000
3	VL	35,150	H	H	L	Postsecondary vocational award	HS/SC/C	25.4	50.2	24.4	49-2011
5	-	-	-	-	-	-	-	-	-	-	49-2020
0	VL	36,720	H	L	VL	Postsecondary vocational award	HS/SC	41.0	45.8	13.2	49-2021
4	VL	49,840	VH	L	VL	Long-term on-the-job training	HS/SC	41.0	45.8	13.2	49-2022
9	-	-	-	-	-	-	-	-	-	-	49-2090
1	VL	44,310	VH	VH	VL	Postsecondary vocational award	HS/SC	24.2	61.6	14.2	49-2091
1	VL	32,320	H	H	L	Postsecondary vocational award	HS/SC	48.0	45.4	6.6	49-2092
1	VL	40,040	H	VH	VL	Postsecondary vocational award	HS/SC	43.5	48.4	8.1	49-2093
2	VL	42,600	H	VL	VL	Postsecondary vocational award	HS/SC	31.1	62.8	6.1	49-2094
0	VL	53,790	VH	VL	VL	Postsecondary vocational award	HS/SC	31.1	62.8	6.1	49-2095
1	VL	26,610	L	L	VL	Postsecondary vocational award	HS/SC	34.3	61.8	3.8	49-2096
1	VL	27,960	L	L	VL	Postsecondary vocational award	HS/SC	49.5	40.5	1.0	49-2097
2	VL	33,410	H	H	VL	Postsecondary vocational award	HS/SC	44.6	47.8	7.6	49-2098
70	-	-	-	-	-	-	-	-	-	-	49-3000
4	VL	45,290	VH	L	VL	Postsecondary vocational award	HS/SC	33.4	55.8	10.8	49-3011
41	-	-	-	-	-	-	-	-	-	-	49-3020
6	VL	34,690	H	L	VL	Long-term on-the-job training	HS/SC	75.0	21.0	4.1	49-3021
1	VL	27,970	L	L	VL	Long-term on-the-job training	HS/SC	70.6	25.1	4.3	49-3022
34	H	32,450	H	L	VL	Postsecondary vocational award	HS/SC	65.5	31.0	3.5	49-3023
11	L	35,780	H	VL	VL	Postsecondary vocational award	HS/SC	66.2	30.4	3.4	49-3031
5	-	-	-	-	-	-	-	-	-	-	49-3040
1	VL	27,860	L	L	VL	Postsecondary vocational award	HS/SC	63.7	30.6	5.7	49-3041
4	VL	38,150	H	L	VL	Postsecondary vocational award	HS/SC	63.7	30.6	5.7	49-3042
0	VL	40,510	H	L	VL	Long-term on-the-job training	HS/SC	63.7	30.6	5.7	49-3043
3	-	-	-	-	-	-	-	-	-	-	49-3050
1	VL	30,660	H	VH	L	Long-term on-the-job training	HS/SC	59.6	33.5	6.9	49-3051
1	VL	28,500	L	VH	L	Long-term on-the-job training	HS/SC	59.6	33.5	6.9	49-3052
1	VL	24,910	L	VH	L	Moderate-term on-the-job training	HS/SC	59.6	33.5	6.9	49-3053
6	-	-	-	-	-	-	-	-	-	-	49-3090

See footnotes at end of table.

**Table IV–1. Occupational employment and job openings data, 2004–14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004–14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004–14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
49-3091	Bicycle repairers .....	8	9	1	VL	14.3	H	3.4	2	VL
49-3092	Recreational vehicle service technicians .....	13	15	3	VL	19.5	VH	3.6	3	VL
49-3093	Tire repairers and changers .....	91	96	4	VL	4.5	VL	3.4	17	VL
49-9000	Other installation, maintenance, and repair occupations .....	2,837	3,180	342	–	12.1	–	4.6	340	–
49-9010	Control and valve installers and repairers .....	48	52	4	–	7.3	–	.0	5	–
49-9011	Mechanical door repairers <sup>1</sup> .....	11	12	2	VL	15.8	H	.0	1	VL
49-9012	Control and valve installers and repairers, except mechanical door <sup>1</sup> .....	38	40	2	VL	4.9	VL	.0	4	VL
49-9021	Heating, air conditioning, and refrigeration mechanics and installers .....	270	321	51	L	19.0	VH	13.1	33	L
49-9031	Home appliance repairers <sup>1</sup> .....	50	51	1	VL	2.6	VL	18.0	3	VL
49-9040	Industrial machinery installation, repair, and maintenance workers .....	1,700	1,907	207	–	12.2	–	.8	178	–
49-9041	Industrial machinery mechanics .....	220	220	0	VL	-2	VL	2.3	13	VL
49-9042	Maintenance and repair workers, general .....	1,332	1,533	202	VH	15.2	H	.6	154	H
49-9043	Maintenance workers, machinery .....	86	89	2	VL	2.8	VL	.0	6	VL
49-9044	Millwrights .....	59	62	3	VL	5.9	VL	1.1	5	VL
49-9045	Refractory materials repairers, except brickmasons .....	4	3	0	VL	-5.2	VL	2.7	0	VL
49-9050	Line installers and repairers .....	251	269	18	–	7.4	–	1.8	34	–
49-9051	Electrical power-line installers and repairers .....	104	107	3	VL	2.5	VL	2.3	11	VL
49-9052	Telecommunications line installers and repairers .....	147	163	16	VL	10.8	L	1.5	23	VL
49-9060	Precision instrument and equipment repairers .....	62	67	5	–	8.7	–	17.4	7	–
49-9061	Camera and photographic equipment repairers .....	5	5	0	VL	-9.1	VL	22.6	0	VL
49-9062	Medical equipment repairers .....	29	34	4	VL	14.8	H	16.2	4	VL
49-9063	Musical instrument repairers and tuners .....	6	6	0	VL	2.8	VL	16.8	1	VL
49-9064	Watch repairers .....	4	4	0	VL	.6	VL	19.5	0	VL
49-9069	Precision instrument and equipment repairers, all other .....	17	18	1	VL	7.7	VL	17.8	2	VL
49-9090	Miscellaneous installation, maintenance, and repair workers .....	456	512	55	–	12.1	–	12.6	81	–
49-9091	Coin, vending, and amusement machine servicers and repairers .....	46	47	1	VL	2.4	VL	17.5	7	VL
49-9092	Commercial divers <sup>1,5</sup> .....	3	3	0	VL	9.4	L	6.6	0	VL
49-9093	Fabric menders, except garment .....	3	3	0	VL	-5	VL	18.5	0	VL
49-9094	Locksmiths and safe repairers <sup>1</sup> .....	28	33	5	VL	16.1	H	37.6	5	VL
49-9095	Manufactured building and mobile home installers .....	15	16	1	VL	7.9	L	17.1	2	VL
49-9096	Riggers <sup>1,4</sup> .....	13	14	2	VL	13.9	L	.0	2	VL
49-9097	Signal and track switch repairers <sup>1,5</sup> .....	8	8	0	VL	2.3	VL	.0	1	VL
49-9098	Helpers--Installation, maintenance, and repair workers .....	163	190	27	L	16.4	H	.9	41	L
49-9099	Installation, maintenance, and repair workers, all other .....	178	197	20	L	11.0	L	19.5	22	VL
<b>51-0000</b>	<b>Production occupations .....</b>	<b>10,562</b>	<b>10,483</b>	<b>-79</b>	<b>–</b>	<b>-7</b>	<b>–</b>	<b>3.4</b>	<b>1,538</b>	<b>–</b>
51-1000	Supervisors, production workers .....	731	750	20	–	2.7	–	3.9	89	–
51-1011	First-line supervisors/managers of production and operating workers .....	731	750	20	L	2.7	VL	3.9	89	L
51-2000	Assemblers and fabricators .....	1,997	2,075	78	–	3.9	–	1.9	393	–
51-2011	Aircraft structure, surfaces, rigging, and systems assemblers <sup>1,3</sup> .....	19	21	1	VL	7.8	L	.0	4	VL
51-2020	Electrical, electronics, and electromechanical assemblers .....	301	272	-29	–	-9.8	–	1.5	44	–
51-2021	Coil winders, tapers, and finishers .....	28	20	-8	VL	-28.5	VL	1.7	4	VL
51-2022	Electrical and electronic equipment assemblers .....	221	207	-14	VL	-6.4	VL	1.5	33	L
51-2023	Electromechanical equipment assemblers .....	52	45	-7	VL	-13.9	VL	1.3	8	VL
51-2031	Engine and other machine assemblers .....	46	46	0	VL	.2	VL	.0	2	VL
51-2041	Structural metal fabricators and fitters <sup>1</sup> .....	90	93	3	VL	2.9	VL	3.1	18	VL

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
Number	Rank	Dollars	Rank					High school or less	Some college	Bachelor's or higher	
0	VL	20,190	L	VH	L	Moderate-term on-the-job training	HS	84.1	9.8	6.1	49-3091
1	VL	28,980	H	VH	L	Long-term on-the-job training	HS	84.1	9.8	6.1	49-3092
4	VL	20,810	L	VH	L	Short-term on-the-job training	HS	84.1	9.8	6.1	49-3093
95	-	-	-	-	-	-	-	-	-	-	49-9000
2	-	-	-	-	-	-	-	-	-	-	49-9010
0	VL	32,000	H	VL	VL	Moderate-term on-the-job training	HS/SC	54.7	32.2	13.1	49-9011
1	VL	43,710	VH	VL	VL	Moderate-term on-the-job training	HS/SC	54.7	32.2	13.1	49-9012
9	L	36,260	H	L	VL	Long-term on-the-job training	HS/SC	60.1	36.5	3.4	49-9021
1	VL	32,180	H	L	VL	Long-term on-the-job training	HS/SC	64.3	30.9	4.8	49-9031
54	-	-	-	-	-	-	-	-	-	-	49-9040
4	VL	39,060	H	L	VL	Long-term on-the-job training	HS/SC	59.6	35.1	5.3	49-9041
46	H	30,710	H	L	VL	Moderate-term on-the-job training	HS/SC	57.7	33.8	8.5	49-9042
2	VL	32,840	H	H	VL	Short-term on-the-job training	HS/SC	67.3	24.3	8.3	49-9043
2	VL	43,720	VH	VH	VL	Long-term on-the-job training	HS/SC	57.7	39.1	3.2	49-9044
0	VL	37,640	H	L	VL	Moderate-term on-the-job training	HS/SC	59.6	35.1	5.3	49-9045
9	-	-	-	-	-	-	-	-	-	-	49-9050
4	VL	49,100	VH	L	VL	Long-term on-the-job training	HS/SC	55.5	39.1	5.4	49-9051
6	VL	40,330	H	H	VL	Long-term on-the-job training	HS/SC	46.8	45.5	7.7	49-9052
2	-	-	-	-	-	-	-	-	-	-	49-9060
0	VL	32,330	H	L	L	Moderate-term on-the-job training	HS/SC	29.8	53.1	17.2	49-9061
1	VL	37,220	H	L	L	Associate degree	HS/SC	29.8	53.1	17.2	49-9062
0	VL	28,020	L	L	L	Long-term on-the-job training	HS/SC	29.8	53.1	17.2	49-9063
0	VL	28,850	H	L	L	Long-term on-the-job training	HS/SC	29.8	53.1	17.2	49-9064
1	VL	44,200	VH	L	L	Moderate-term on-the-job training	HS/SC	29.8	53.1	17.2	49-9069
18	-	-	-	-	-	-	-	-	-	-	49-9090
1	VL	28,010	L	L	H	Moderate-term on-the-job training	HS/SC	68.4	23.3	8.3	49-9091
0	VL	35,240	H	H	L	Moderate-term on-the-job training	HS/SC	63.4	27.9	8.6	49-9092
0	VL	32,490	H	H	L	Moderate-term on-the-job training	HS/SC	61.4	29.0	9.6	49-9093
1	VL	30,360	H	VL	L	Moderate-term on-the-job training	HS/SC	62.4	33.7	3.9	49-9094
0	VL	23,350	L	VH	VL	Moderate-term on-the-job training	HS/SC	68.3	25.6	6.1	49-9095
0	VL	35,330	H	H	L	Short-term on-the-job training	HS/SC	63.4	36.0	.6	49-9096
0	VL	44,570	VH	VL	VL	Moderate-term on-the-job training	HS/SC	63.4	27.9	8.6	49-9097
8	L	21,310	L	VH	H	Short-term on-the-job training	HS/SC	73.2	22.2	4.6	49-9098
6	VL	33,760	H	H	L	Moderate-term on-the-job training	HS/SC	61.4	29.0	9.6	49-9099
<b>291</b>	-	-	-	-	-	-	-	-	-	-	<b>51-0000</b>
17	-	-	-	-	-	-	-	-	-	-	51-1000
17	L	44,740	VH	L	VL	Work experience in a related occupation	HS/SC	58.6	28.1	13.3	51-1011
62	-	-	-	-	-	-	-	-	-	-	51-2000
1	VL	37,000	H	VH	VL	Long-term on-the-job training	HS/SC	56.4	38.8	4.9	51-2011
7	-	-	-	-	-	-	-	-	-	-	51-2020
1	VL	25,460	L	VH	VL	Short-term on-the-job training	HS/SC	73.4	20.1	6.4	51-2021
5	VL	24,290	L	VH	VL	Short-term on-the-job training	HS/SC	73.4	20.1	6.4	51-2022
1	VL	26,440	L	VH	VL	Short-term on-the-job training	HS/SC	73.4	20.1	6.4	51-2023
1	VL	34,800	H	VH	VL	Short-term on-the-job training	HS/SC	73.8	25.2	1.0	51-2031
2	VL	29,840	H	H	VL	Moderate-term on-the-job training	HS/SC	74.1	25.0	.8	51-2041

See footnotes at end of table.

**Table IV–1. Occupational employment and job openings data, 2004–14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004–14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004–14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
51-2090	Miscellaneous assemblers and fabricators .....	1,541	1,644	103	–	6.7	–	1.9	324	–
51-2091	Fiberglass laminators and fabricators .....	31	32	1	VL	4.0	VL	2.3	6	VL
51-2092	Team assemblers .....	1,239	1,329	90	H	7.3	VL	1.8	262	VH
51-2093	Timing device assemblers, adjusters, and calibrators .....			0	VL	-1.5	VL	4.1	1	VL
51-2099	Assemblers and fabricators, all other .....	3	3	268	12	4.5	VL	2.4	55	L
51-3000	Food processing occupations.....	725	810	86	–	11.8	–	3.0	122	–
51-3011	Bakers .....	166	191	25	L	15.2	H	8.1	37	L
51-3020	Butchers and other meat, poultry, and fish processing workers.....	411	462	51	–	12.5	–	1.4	65	–
51-3021	Butchers and meat cutters .....	134	145	11	VL	7.9	L	1.4	20	VL
51-3022	Meat, poultry, and fish cutters and trimmers.....	140	163	22	L	15.8	H	1.6	23	VL
51-3023	Slaughterers and meat packers .....	136	155	19	L	13.8	L	1.3	22	VL
51-3090	Miscellaneous food processing workers.....	148	157	9	–	6.1	–	1.4	21	–
51-3091	Food and tobacco roasting, baking, and drying machine operators and tenders <sup>4</sup> .....	18	19	1	VL	4.7	VL	.6	2	VL
51-3092	Food batchmakers.....	87	94	7	VL	7.9	L	2.1	16	VL
51-3093	Food cooking machine operators and tenders <sup>3</sup> .....	43	44	1	VL	2.9	VL	.0	3	VL
51-4000	Metal workers and plastic workers .....	2,175	2,085	-90	–	-4.1	–	2.0	211	–
51-4010	Computer control programmers and operators .....	143	141	-2	–	-1.2	–	.0	15	–
51-4011	Computer-controlled machine tool operators, metal and plastic <sup>1</sup> .....	126	124	-1	VL	-1.2	VL	.0	13	VL
51-4012	Numerical tool and process control programmers <sup>1</sup> .....	18	17	0	VL	-1.1	VL	.0	2	VL
51-4020	Forming machine setters, operators, and tenders, metal and plastic.....	165	143	-22	–	-13.5	–	.2	17	–
51-4021	Extruding and drawing machine setters, operators, and tenders, metal and plastic <sup>1</sup> .....	89	70	-19	VL	-21.3	VL	.0	9	VL
51-4022	Forging machine setters, operators, and tenders, metal and plastic <sup>3</sup> .....	38	37	-2	VL	-4.6	VL	.7	4	VL
51-4023	Rolling machine setters, operators, and tenders, metal and plastic <sup>1,2</sup> .....	37	36	-1	VL	-3.9	VL	.0	4	VL
51-4030	Machine tool cutting setters, operators, and tenders, metal and plastic.....	495	431	-65	–	-13.1	–	.5	30	–
51-4031	Cutting, punching, and press machine setters, operators, and tenders, metal and plastic.....	251	208	-43	VL	-17.2	VL	.4	13	VL
51-4032	Drilling and boring machine tool setters, operators, and tenders, metal and plastic <sup>1,3</sup> .....	42	39	-4	VL	-8.4	VL	.0	2	VL
51-4033	Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic.....	101	91	-10	VL	-1.0	VL	1.2	5	VL
51-4034	Lathe and turning machine tool setters, operators, and tenders, metal and plastic <sup>2</sup> .....	71	64	-6	VL	-9.0	VL	.0	7	VL
51-4035	Milling and planing machine setters, operators, and tenders, metal and plastic <sup>1,5</sup> .....	31	29	-2	VL	-5.3	VL	.0	2	VL
51-4041	Machinists .....	370	386	16	VL	4.3	VL	1.0	33	L
51-4050	Metal furnace and kiln operators and tenders .....	31	26	-5	–	-14.7	–	.2	3	–
51-4051	Metal-refining furnace operators and tenders .....	17	15	-2	VL	-13.5	VL	.2	2	VL
51-4052	Pourers and casters, metal .....	14	12	-2	VL	-16.1	VL	.2	1	VL
51-4060	Model makers and patternmakers, metal and plastic.....	14	13	-1	–	-5.5	–	.0	2	–
51-4061	Model makers, metal and plastic <sup>1,3</sup> .....	8	8	0	VL	-4.0	VL	.0	1	VL
51-4062	Patternmakers, metal and plastic <sup>1,3</sup> .....	6	6	0	VL	-7.5	VL	.0	1	VL
51-4070	Molders and molding machine setters, operators, and tenders, metal and plastic.....	175	157	-17	–	-9.9	–	.3	19	–
51-4071	Foundry mold and coremakers .....	17	15	-2	VL	-13.3	VL	.4	2	VL

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code	
		Dollars	Rank					High school or less	Some college	Bachelor's or higher		
Number	Rank											
50	-	-	-	-	-	-	-	-	-	-	-	51-2090
1	VL	25,340	L	VH	VL	Moderate-term on-the-job training	HS/SC	71.8	22.5	5.7	-	51-2091
41	H	23,750	L	VH	VL	Moderate-term on-the-job training	HS/SC	71.8	22.5	5.7	-	51-2092
0	VL	28,610	H	VH	VL	Moderate-term on-the-job training	HS/SC	71.8	22.5	5.7	-	51-2093
8	L	24,750	L	VH	VL	Moderate-term on-the-job training	HS/SC	71.8	22.5	5.7	-	51-2099
25	-	-	-	-	-	-	-	-	-	-	-	51-3000
6	VL	21,330	L	H	H	Long-term on-the-job training	HS	74.4	18.6	7.0	-	51-3011
14	-	-	-	-	-	-	-	-	-	-	-	51-3020
4	VL	25,890	L	H	L	Long-term on-the-job training	HS	81.4	15.4	3.3	-	51-3021
5	VL	18,900	VL	H	L	Short-term on-the-job training	HS	81.4	15.4	3.3	-	51-3022
5	VL	20,860	L	H	L	Moderate-term on-the-job training	HS	81.4	15.4	3.3	-	51-3023
5	-	-	-	-	-	-	-	-	-	-	-	51-3090
1	VL	23,840	L	VH	L	Short-term on-the-job training	HS	80.4	15.0	4.6	-	51-3091
3	VL	22,090	L	H	H	Short-term on-the-job training	HS	77.2	16.8	6.0	-	51-3092
1	VL	20,850	L	VH	H	Short-term on-the-job training	HS	77.6	12.7	9.6	-	51-3093
56	-	-	-	-	-	-	-	-	-	-	-	51-4000
2	-	-	-	-	-	-	-	-	-	-	-	51-4010
2	VL	30,690	H	H	VL	Moderate-term on-the-job training	HS/SC	47.0	46.8	6.2	-	51-4011
0	VL	40,170	H	H	VL	Long-term on-the-job training	HS/SC	47.0	46.8	6.2	-	51-4012
4	-	-	-	-	-	-	-	-	-	-	-	51-4020
3	VL	27,410	L	H	VL	Moderate-term on-the-job training	HS/SC	71.5	21.5	7.0	-	51-4021
1	VL	27,500	L	H	VL	Moderate-term on-the-job training	HS/SC	73.1	23.9	3.0	-	51-4022
1	VL	29,800	H	L	VL	Moderate-term on-the-job training	HS/SC	8.0	2.0	.0	-	51-4023
11	-	-	-	-	-	-	-	-	-	-	-	51-4030
6	VL	25,900	L	VH	VL	Moderate-term on-the-job training	HS/SC	76.3	21.4	2.3	-	51-4031
1	VL	28,480	L	VH	VL	Moderate-term on-the-job training	HS	77.9	18.4	3.6	-	51-4032
2	VL	27,440	L	H	VL	Moderate-term on-the-job training	HS	78.7	19.5	1.8	-	51-4033
1	VL	31,280	H	VH	VL	Moderate-term on-the-job training	HS/SC	75.6	23.0	1.5	-	51-4034
1	VL	31,010	H	VH	VL	Moderate-term on-the-job training	HS/SC	76.6	21.0	2.4	-	51-4035
10	L	33,960	H	H	VL	Long-term on-the-job training	HS/SC	66.3	3.0	3.7	-	51-4041
1	-	-	-	-	-	-	-	-	-	-	-	51-4050
0	VL	32,740	H	H	VL	Moderate-term on-the-job training	HS/SC	61.6	31.4	7.0	-	51-4051
0	VL	28,960	H	H	VL	Moderate-term on-the-job training	HS/SC	61.6	31.4	7.0	-	51-4052
0	-	-	-	-	-	-	-	-	-	-	-	51-4060
0	VL	44,250	VH	VH	VL	Moderate-term on-the-job training	HS/SC	52.2	37.8	1.0	-	51-4061
0	VL	37,140	H	VH	VL	Moderate-term on-the-job training	HS/SC	52.2	37.8	1.0	-	51-4062
4	-	-	-	-	-	-	-	-	-	-	-	51-4070
0	VL	27,810	L	VH	VL	Moderate-term on-the-job training	HS/SC	72.0	25.5	2.5	-	51-4071

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004-14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004-14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
51-4072	Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic.....	157	142	-15	VL	-9.5	VL	.3	17	VL
51-4081	Multiple machine tool setters, operators, and tenders, metal and plastic <sup>1,4</sup> .....	97	98	0	VL	.3	VL	.0	6	VL
51-4111	Tool and die makers .....	103	100	-3	VL	-2.6	VL	2.7	7	VL
51-4120	Welding, soldering, and brazing workers.....	429	448	19	-	4.5	-	6.4	59	-
51-4121	Welders, cutters, solderers, and brazers.....	377	396	19	L	5.0	VL	6.3	52	L
51-4122	Welding, soldering, and brazing machine setters, operators, and tenders.....	52	52	0	VL	.4	VL	7.4	7	VL
51-4190	Miscellaneous metalworkers and plastic workers .....	153	142	-11	-	-7.4	-	2.5	22	-
51-4191	Heat treating equipment setters, operators, and tenders, metal and plastic <sup>1,3</sup> .....	26	26	0	VL	-.4	VL	2.4	3	VL
51-4192	Lay-out workers, metal and plastic <sup>1,3</sup> .....	11	11	-1	VL	-4.6	VL	.0	1	VL
51-4193	Plating and coating machine setters, operators, and tenders, metal and plastic.....	40	38	-2	VL	-4.0	VL	2.8	9	VL
51-4194	Tool grinders, filers, and sharpeners <sup>1,3</sup> .....	21	19	-2	VL	-7.7	VL	3.7	2	VL
51-4199	Metal workers and plastic workers, all other	55	47	-7	VL	-13.6	VL	2.4	5	VL
51-5000	Printing occupations .....	413	405	-8	-	-1.9	-	3.3	53	-
51-5010	Bookbinders and bindery workers .....	81	73	-8	-	-9.9	-	.4	9	-
51-5011	Bindery workers.....	74	66	-8	VL	-10.4	VL	.4	8	VL
51-5012	Bookbinders .....	7	7	0	VL	-4.5	VL	.3	1	VL
51-5020	Printers .....	332	332	0	-	.1	-	3.9	44	-
51-5021	Job printers.....	63	64	1	VL	1.8	VL	8.0	8	VL
51-5022	Prepress technicians and workers .....	78	71	-7	VL	-8.4	VL	2.1	10	VL
51-5023	Printing machine operators .....	191	197	6	VL	2.9	VL	3.2	26	VL
51-6000	Textile, apparel, and furnishings occupations.....	929	768	-161	-	-17.3	-	11.1	114	-
51-6011	Laundry and dry-cleaning workers .....	235	265	30	L	12.7	L	5.2	44	L
51-6021	Pressers, textile, garment, and related materials .....	82	84	2	VL	2.9	VL	.1	14	VL
51-6031	Sewing machine operators.....	256	163	-93	VL	-36.5	VL	6.7	20	VL
51-6040	Shoe and leather workers .....	15	12	-3	-	-19.4	-	20.5	2	-
51-6041	Shoe and leather workers and repairers <sup>1,3</sup> .....	10	9	-2	VL	-16.0	VL	28.2	2	VL
51-6042	Shoe machine operators and tenders <sup>1,3</sup> .....	5	3	-1	VL	-27.3	VL	.0	0	VL
51-6050	Tailors, dressmakers, and sewers .....	85	79	-6	-	-7.0	-	52.1	5	-
51-6051	Sewers, hand .....	31	25	-6	VL	-19.7	VL	59.2	2	VL
51-6052	Tailors, dressmakers, and custom sewers....	54	54	0	VL	.3	VL	48.8	4	VL
51-6060	Textile machine setters, operators, and tenders	148	81	-66	-	-45.0	-	4.0	19	-
51-6061	Textile bleaching and dyeing machine operators and tenders <sup>1,5</sup> .....	21	12	-10	VL	-45.3	VL	.0	4	VL
51-6062	Textile cutting machine setters, operators, and tenders.....	28	21	-7	VL	-25.0	VL	10.8	1	VL
51-6063	Textile knitting and weaving machine setters, operators, and tenders.....	46	20	-26	VL	-56.2	VL	4.9	6	VL
51-6064	Textile winding, twisting, and drawing out machine setters, operators, and tenders.....	53	29	-24	VL	-45.5	VL	.0	9	VL
51-6090	Miscellaneous textile, apparel, and furnishings workers .....	109	84	-24	-	-22.4	-	15.9	10	-
51-6091	Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers <sup>1,5</sup> .....	23	17	-6	VL	-25.3	VL	.0	2	VL
51-6092	Fabric and apparel patternmakers <sup>1,5</sup> .....	9	6	-3	VL	-30.5	VL	.0	1	VL
51-6093	Upholsterers <sup>1</sup> .....	53	44	-9	VL	-16.5	VL	27.5	4	VL
51-6099	Textile, apparel, and furnishings workers, all other.....	23	16	-7	VL	-29.8	VL	6.8	3	VL
51-7000	Woodworkers.....	364	345	-18	-	-5.0	-	13.5	43	-
51-7011	Cabinetmakers and bench carpenters .....	148	154	6	VL	4.1	VL	15.7	12	VL
51-7021	Furniture finishers.....	34	30	-5	VL	-13.3	VL	28.5	2	VL
51-7030	Model makers and patternmakers, wood .....	6	6	0	-	6.5	-	.0	1	-
51-7031	Model makers, wood <sup>1,5</sup> .....	3	4	0	VL	9.0	L	.0	1	VL

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
Number	Rank	Dollars	Rank					High school or less	Some college	Bachelor's or higher	
4	VL	24,180	L	VH	VL	Moderate-term on-the-job training	HS/SC	72.0	25.5	2.5	51-4072
3	VL	29,250	H	VH	VL	Moderate-term on-the-job training	HS/SC	64.5	29.5	6.0	51-4081
2	VL	42,740	H	H	VL	Long-term on-the-job training	HS/SC	52.6	40.6	6.8	51-4111
14	-	-	-	-	-	-	-	-	-	-	51-4120
13	L	30,620	H	VH	VL	Long-term on-the-job training	HS/SC	75.2	23.0	1.9	51-4121
1	VL	29,780	H	VH	VL	Moderate-term on-the-job training	HS/SC	75.2	23.0	1.9	51-4122
4	-	-	-	-	-	-	-	-	-	-	51-4190
1	VL	29,650	H	L	VL	Moderate-term on-the-job training	HS/SC	73.7	24.4	1.9	51-4191
0	VL	32,550	H	VH	VL	Moderate-term on-the-job training	HS/SC	70.9	27.3	1.8	51-4192
1	VL	26,960	L	L	VL	Moderate-term on-the-job training	HS	83.0	12.2	4.9	51-4193
1	VL	30,200	H	VL	VL	Moderate-term on-the-job training	HS/SC	65.1	29.1	5.8	51-4194
1	VL	33,590	H	VH	VL	Moderate-term on-the-job training	HS/SC	76.1	20.5	3.4	51-4199
11	-	-	-	-	-	-	-	-	-	-	51-5000
2	-	-	-	-	-	-	-	-	-	-	51-5010
2	VL	23,520	L	H	VL	Short-term on-the-job training	HS/SC	71.3	21.9	6.8	51-5011
0	VL	28,530	L	H	VL	Moderate-term on-the-job training	HS/SC	71.3	21.9	6.8	51-5012
8	-	-	-	-	-	-	-	-	-	-	51-5020
2	VL	32,060	H	L	L	Long-term on-the-job training	HS/SC	63.8	25.7	10.5	51-5021
2	VL	31,830	H	VH	H	Postsecondary vocational award	HS/SC	47.9	39.5	12.6	51-5022
5	VL	29,900	H	L	VL	Moderate-term on-the-job training	HS/SC	70.2	23.4	6.4	51-5023
21	-	-	-	-	-	-	-	-	-	-	51-6000
9	L	17,220	VL	H	H	Moderate-term on-the-job training	HS	81.8	12.8	5.5	51-6011
2	VL	17,330	VL	H	H	Short-term on-the-job training	HS	88.0	8.4	3.5	51-6021
3	VL	17,920	VL	VH	L	Moderate-term on-the-job training	HS	86.1	10.9	3.0	51-6031
0	-	-	-	-	-	-	-	-	-	-	51-6040
0	VL	19,330	VL	L	VL	Long-term on-the-job training	HS/SC	70.1	20.6	9.3	51-6041
0	VL	19,630	VL	VH	L	Moderate-term on-the-job training	HS	85.7	10.8	3.5	51-6042
2	-	-	-	-	-	-	-	-	-	-	51-6050
1	VL	18,990	VL	H	H	Short-term on-the-job training	HS	68.7	2.0	11.3	51-6051
1	VL	22,440	L	H	H	Long-term on-the-job training	HS	68.7	2.0	11.3	51-6052
3	-	-	-	-	-	-	-	-	-	-	51-6060
1	VL	21,960	L	VH	VL	Moderate-term on-the-job training	HS	88.4	7.5	4.2	51-6061
1	VL	20,380	L	VH	L	Moderate-term on-the-job training	HS	90.5	4.2	5.3	51-6062
1	VL	23,880	L	VH	VL	Long-term on-the-job training	HS	90.1	3.7	6.2	51-6063
1	VL	22,620	L	VH	VL	Moderate-term on-the-job training	HS	91.4	7.0	1.6	51-6064
3	-	-	-	-	-	-	-	-	-	-	51-6090
0	VL	27,800	L	VH	L	Moderate-term on-the-job training	HS	76.1	16.6	7.2	51-6091
0	VL	28,810	H	L	L	Long-term on-the-job training	HS	76.1	16.6	7.2	51-6092
1	VL	25,690	L	L	L	Long-term on-the-job training	HS/SC	73.3	20.5	6.2	51-6093
1	VL	21,510	L	VH	L	Short-term on-the-job training	HS	84.7	12.5	2.8	51-6099
10	-	-	-	-	-	-	-	-	-	-	51-7000
4	VL	25,290	L	L	VL	Long-term on-the-job training	HS/SC	73.4	22.3	4.3	51-7011
1	VL	23,610	L	H	L	Long-term on-the-job training	HS/SC	63.5	25.3	11.2	51-7021
0	-	-	-	-	-	-	-	-	-	-	51-7030
0	VL	26,910	L	L	L	Long-term on-the-job training	HS	74.6	18.6	6.8	51-7031

See footnotes at end of table.

**Table IV–1. Occupational employment and job openings data, 2004–14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004–14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004–14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
51-7032	Patternmakers, wood <sup>1,5</sup> .....	3	3	0	VL	3.2	VL	.0	0	VL
51-7040	Woodworking machine setters, operators, and tenders .....	150	133	-17	-	-11.1	-	1.9	24	-
51-7041	Sawing machine setters, operators, and tenders, wood .....	58	51	-7	VL	-11.3	VL	1.0	11	VL
51-7042	Woodworking machine setters, operators, and tenders, except sawing .....	92	82	-10	VL	-11.0	VL	2.4	13	VL
51-7099	Woodworkers, all other <sup>2</sup> .....	26	23	-4	VL	-13.9	VL	50.1	5	VL
51-8000	Plant and system operators .....	320	324	4	-	1.4	-	.2	35	-
51-8010	Power plant operators, distributors, and dispatchers .....	47	46	0	-	-4	-	.0	6	-
51-8011	Nuclear power reactor operators .....	4	4	0	VL	-5	VL	.0	1	VL
51-8012	Power distributors and dispatchers .....	8	8	0	VL	.0	VL	.0	1	VL
51-8013	Power plant operators .....	34	34	0	VL	-4	VL	.0	5	VL
51-8021	Stationary engineers and boiler operators .....	50	52	2	VL	3.4	VL	1.0	5	VL
51-8031	Water and liquid waste treatment plant and system operators .....	94	110	15	VL	16.2	H	.0	6	VL
51-8090	Miscellaneous plant and system operators .....	129	117	-12	-	-9.6	-	.1	18	-
51-8091	Chemical plant and system operators .....	60	49	-11	VL	-17.7	VL	.1	8	VL
51-8092	Gas plant operators .....	11	12	1	VL	7.7	VL	.1	2	VL
51-8093	Petroleum pump system operators, refinery operators, and gaugers .....	43	39	-4	VL	-8.6	VL	.1	6	VL
51-8099	Plant and system operators, all other .....	15	16	1	VL	7.1	VL	.2	2	VL
51-9000	Other production occupations .....	2,909	2,920	10	-	.4	-	2.5	477	-
51-9010	Chemical processing machine setters, operators, and tenders .....	87	85	-2	-	-1.8	-	.7	10	-
51-9011	Chemical equipment operators and tenders .....	49	47	-2	VL	-4.5	VL	.8	6	VL
51-9012	Separating, filtering, clarifying, precipitating, and still machine setters, operators, and tenders .....	38	38	1	VL	1.6	VL	.6	5	VL
51-9020	Crushing, grinding, polishing, mixing, and blending workers .....	208	207	-1	-	-6	-	.9	27	-
51-9021	Crushing, grinding, and polishing machine setters, operators, and tenders .....	43	43	0	VL	.8	VL	1.0	6	VL
51-9022	Grinding and polishing workers, hand .....	45	41	-4	VL	-8.7	VL	.9	6	VL
51-9023	Mixing and blending machine setters, operators, and tenders .....	120	122	2	VL	2.0	VL	.8	16	VL
51-9030	Cutting workers .....	104	103	-1	-	-1.3	-	1.8	9	-
51-9031	Cutters and trimmers, hand .....	29	30	1	VL	2.4	VL	1.9	3	VL
51-9032	Cutting and slicing machine setters, operators, and tenders .....	75	73	-2	VL	-2.7	VL	1.8	6	VL
51-9041	Extruding, forming, pressing, and compacting machine setters, operators, and tenders .....	74	72	-2	VL	-2.2	VL	.0	8	VL
51-9051	Furnace, kiln, oven, drier, and kettle operators and tenders .....	30	29	-1	VL	-4.2	VL	.4	3	VL
51-9061	Inspectors, testers, sorters, samplers, and weighers .....	508	494	-13	VL	-2.6	VL	1.9	85	L
51-9071	Jewelers and precious stone and metal workers .....	42	42	0	VL	.0	VL	38.0	6	VL
51-9080	Medical, dental, and ophthalmic laboratory technicians .....	87	94	7	-	8.4	-	7.2	6	-
51-9081	Dental laboratory technicians .....	50	54	4	VL	7.6	VL	10.2	3	VL
51-9082	Medical appliance technicians .....	11	13	2	VL	13.3	L	9.7	1	VL
51-9083	Ophthalmic laboratory technicians .....	25	27	2	VL	7.8	L	.0	2	VL
51-9111	Packaging and filling machine operators and tenders .....	412	422	9	VL	2.3	VL	.1	80	L
51-9120	Painting workers .....	186	192	6	-	3.4	-	6.2	30	-
51-9121	Coating, painting, and spraying machine setters, operators, and tenders .....	103	100	-3	VL	-3.4	VL	6.5	16	VL
51-9122	Painters, transportation equipment .....	53	61	7	VL	14.1	H	5.4	10	VL
51-9123	Painting, coating, and decorating workers .....	29	31	2	VL	7.9	L	7.0	5	VL
51-9130	Photographic process workers and processing machine operators .....	86	66	-20	-	-23.6	-	1.9	17	-
51-9131	Photographic process workers .....	32	28	-4	VL	-11.4	VL	1.9	7	VL

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
Number	Rank	Dollars	Rank					High school or less	Some college	Bachelor's or higher	
0	VL	30,950	H	L	L	Long-term on-the-job training	HS	74.6	18.6	6.8	51-7032
4	-	-	-	-	-	-	-	-	-	-	51-7040
2	VL	22,700	L	VH	VL	Moderate-term on-the-job training	HS	88.3	11.0	.7	51-7041
2	VL	22,740	L	VH	VL	Moderate-term on-the-job training	HS	68.6	16.9	14.5	51-7042
1	VL	21,140	L	L	L	Moderate-term on-the-job training	HS/SC	59.1	22.2	18.8	51-7099
11	-	-	-	-	-	-	-	-	-	-	51-8000
1	-	-	-	-	-	-	-	-	-	-	51-8010
0	VL	64,090	VH	VL	VL	Long-term on-the-job training	HS/SC	42.1	45.7	12.2	51-8011
0	VL	57,330	VH	VL	VL	Long-term on-the-job training	HS/SC	42.1	45.7	12.2	51-8012
1	VL	52,530	VH	VL	VL	Long-term on-the-job training	HS/SC	42.1	45.7	12.2	51-8013
1	VL	44,150	VH	VL	VL	Long-term on-the-job training	HS/SC	48.9	35.8	15.3	51-8021
5	VL	34,960	H	VL	VL	Long-term on-the-job training	HS/SC	51.9	39.1	9.0	51-8031
4	-	-	-	-	-	-	-	-	-	-	51-8090
2	VL	44,830	VH	L	VL	Long-term on-the-job training	HS/SC	54.0	38.2	7.8	51-8091
0	VL	50,680	VH	L	VL	Long-term on-the-job training	HS/SC	54.0	38.2	7.8	51-8092
1	VL	50,490	VH	L	VL	Long-term on-the-job training	HS/SC	54.0	38.2	7.8	51-8093
1	VL	41,800	H	L	VL	Long-term on-the-job training	HS/SC	54.0	38.2	7.8	51-8099
78	-	-	-	-	-	-	-	-	-	-	51-9000
3	-	-	-	-	-	-	-	-	-	-	51-9010
2	VL	38,870	H	L	VL	Moderate-term on-the-job training	HS/SC	46.4	37.3	16.2	51-9011
1	VL	33,230	H	L	VL	Moderate-term on-the-job training	HS/SC	46.4	37.3	16.2	51-9012
6	-	-	-	-	-	-	-	-	-	-	51-9020
1	VL	26,950	L	H	VL	Moderate-term on-the-job training	HS/SC	69.0	27.0	4.0	51-9021
1	VL	23,470	L	H	VL	Moderate-term on-the-job training	HS/SC	69.0	27.0	4.0	51-9022
3	VL	28,110	L	H	VL	Moderate-term on-the-job training	HS/SC	69.0	27.0	4.0	51-9023
2	-	-	-	-	-	-	-	-	-	-	51-9030
1	VL	22,030	L	VH	VL	Short-term on-the-job training	HS/SC	78.6	20.2	1.1	51-9031
2	VL	26,670	L	VH	VL	Moderate-term on-the-job training	HS/SC	78.6	20.2	1.1	51-9032
2	VL	27,460	L	VH	VL	Moderate-term on-the-job training	HS/SC	75.8	21.2	3.0	51-9041
1	VL	29,730	H	L	VL	Moderate-term on-the-job training	HS/SC	67.1	22.3	10.6	51-9051
12	L	28,410	L	VH	VL	Moderate-term on-the-job training	HS/SC	53.1	33.1	13.8	51-9061
1	VL	27,400	L	L	L	Postsecondary vocational award	HS/SC/C	51.2	28.7	20.1	51-9071
3	-	-	-	-	-	-	-	-	-	-	51-9080
1	VL	31,060	H	L	L	Long-term on-the-job training	HS/SC	43.9	41.2	14.9	51-9081
0	VL	27,820	L	L	L	Long-term on-the-job training	HS/SC	43.9	41.2	14.9	51-9082
1	VL	23,710	L	L	L	Moderate-term on-the-job training	HS/SC	43.9	41.2	14.9	51-9083
9	L	22,200	L	VH	VL	Short-term on-the-job training	HS	82.9	12.4	4.7	51-9111
6	-	-	-	-	-	-	-	-	-	-	51-9120
3	VL	26,300	L	H	VL	Moderate-term on-the-job training	HS	8.0	17.3	2.7	51-9121
2	VL	35,120	H	H	VL	Long-term on-the-job training	HS	8.0	17.3	2.7	51-9122
1	VL	22,770	L	H	VL	Short-term on-the-job training	HS	8.0	17.3	2.7	51-9123
2	-	-	-	-	-	-	-	-	-	-	51-9130
1	VL	20,040	VL	VH	VH	Moderate-term on-the-job training	HS/SC/C	48.8	30.1	21.2	51-9131

See footnotes at end of table.

**Table IV–1. Occupational employment and job openings data, 2004–14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Employment		Employment change, 2004–14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004–14	
		2004	2014	Numeric		Percent			Number	Rank
				Number	Rank	Number	Rank			
51-9132	Photographic processing machine operators	54	38	-17	VL	-30.7	VL	1.9	10	VL
51-9141	Semiconductor processors <sup>1,5</sup> .....	45	42	-3	VL	-7.5	VL	.0	7	VL
51-9190	Miscellaneous production workers .....	1,040	1,072	31	–	3.0	–	2.0	188	–
51-9191	Cementing and gluing machine operators and tenders <sup>1,2</sup> .....	25	25	0	VL	1.9	VL	.0	4	VL
51-9192	Cleaning, washing, and metal pickling equipment operators and tenders <sup>1,2</sup> .....	18	18	0	VL	1.0	VL	4.9	3	VL
51-9193	Cooling and freezing equipment operators and tenders <sup>1,5</sup> .....	9	9	0	VL	.8	VL	.0	1	VL
51-9194	Etchers and engravers <sup>1,3</sup> .....	12	12	0	VL	2.1	VL	18.5	2	VL
51-9195	Molders, shapers, and casters, except metal and plastic <sup>1</sup> .....	47	43	-3	VL	-7.0	VL	18.1	7	VL
51-9196	Paper goods machine setters, operators, and tenders .....	111	113	3	VL	2.4	VL	.7	15	VL
51-9197	Tire builders .....	18	15	-3	VL	-16.6	VL	.0	4	VL
51-9198	Helpers--Production workers .....	484	522	38	L	7.9	L	.1	107	H
51-9199	Production workers, all other .....	319	315	-4	VL	-1.3	VL	2.9	45	L
<b>53-0000</b>	<b>Transportation and material moving occupations .....</b>	<b>10,098</b>	<b>11,214</b>	<b>1,116</b>	<b>–</b>	<b>11.1</b>	<b>–</b>	<b>4.2</b>	<b>1,995</b>	<b>–</b>
53-1000	Supervisors, transportation and material moving workers .....	408	458	50	–	12.3	–	1.3	37	–
53-1011	Aircraft cargo handling supervisors .....	8	9	1	VL	17.4	H	1.5	1	VL
53-1021	First-line supervisors/managers of helpers, laborers, and material movers, hand ..	173	187	14	VL	8.1	L	1.3	15	VL
53-1031	First-line supervisors/managers of transportation and material-moving machine and vehicle operators .....	228	262	35	L	15.3	H	1.3	22	VL
53-2000	Air transportation occupations .....	135	157	22	–	16.5	–	2.3	11	–
53-2010	Aircraft pilots and flight engineers .....	106	124	18	–	17.2	–	2.4	8	–
53-2011	Airline pilots, copilots, and flight engineers...	84	98	14	VL	17.2	H	2.4	7	VL
53-2012	Commercial pilots .....	22	26	4	VL	16.8	H	2.5	2	VL
53-2020	Air traffic controllers and airfield operations specialists .....	29	34	4	–	14.4	–	1.9	2	–
53-2021	Air traffic controllers <sup>1</sup> .....	24	28	3	VL	14.3	H	1.8	2	VL
53-2022	Airfield operations specialists <sup>1</sup> .....	5	6	1	VL	15.0	H	2.1	0	VL
53-3000	Motor vehicle operators .....	4,182	4,810	629	–	15.0	–	8.4	696	–
53-3011	Ambulance drivers and attendants, except emergency medical technicians <sup>1,3</sup> .....	20	26	6	VL	28.0	VH	11.0	5	VL
53-3020	Bus drivers .....	653	757	104	–	15.9	–	.5	109	–
53-3021	Bus drivers, transit and intercity .....	190	231	41	L	21.7	VH	.5	34	L
53-3022	Bus drivers, school .....	463	526	63	L	13.6	L	.5	76	L
53-3030	Driver/sales workers and truck drivers .....	3,232	3,681	449	–	13.9	–	9.1	516	–
53-3031	Driver/sales workers .....	451	513	62	L	13.8	L	8.8	72	L
53-3032	Truck drivers, heavy and tractor-trailer .....	1,738	1,962	223	VH	12.9	L	9.3	274	VH
53-3033	Truck drivers, light or delivery services .....	1,042	1,206	164	H	15.7	H	8.9	169	H
53-3041	Taxi drivers and chauffeurs .....	188	235	47	L	24.8	VH	25.7	43	L
53-3099	Motor vehicle operators, all other .....	88	111	23	L	25.7	VH	1.0	23	VL
53-4000	Rail transportation occupations .....	112	111	-1	–	-1.1	–	.0	6	–
53-4010	Locomotive engineers and operators <sup>1</sup> .....	40	39	-1	VL	-2.5	VL	.0	2	VL
53-4021	Railroad brake, signal, and switch operators <sup>1,3</sup> .....	17	11	-7	VL	-38.5	VL	.0	1	VL
53-4031	Railroad conductors and yardmasters <sup>1</sup> .....	38	45	8	VL	20.3	VH	.0	3	VL
53-4041	Subway and streetcar operators <sup>1,3</sup> .....	9	10	1	VL	13.7	L	.0	1	VL
53-4099	Rail transportation workers, all other <sup>1,3</sup> .....	8	6	-2	VL	-30.8	VL	.0	0	VL
53-5000	Water transportation occupations .....	72	77	4	–	6.2	–	3.1	7	–
53-5011	Sailors and marine oilers <sup>2</sup> .....	28	30	1	VL	5.2	VL	.0	4	VL
53-5020	Ship and boat captains and operators .....	32	34	2	–	4.7	–	5.5	2	–
53-5021	Captains, mates, and pilots of water vessels .....	29	30	1	VL	4.8	VL	5.4	2	VL
53-5022	Motorboat operators .....	3	4	0	VL	4.4	VL	7.0	0	VL
53-5031	Ship engineers <sup>1,5</sup> .....	12	13	1	VL	12.7	L	3.7	1	VL

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
		Dollars	Rank					High school or less	Some college	Bachelor's or higher	
Number	Rank										
1	VL	19,400	VL	VH	VH	Short-term on-the-job training	HS/SC/C	48.8	30.1	21.2	51-9132
1	VL	28,810	H	VH	VL	Associate degree	HS/SC	67.8	24.3	7.9	51-9141
31	-	-	-	-	-	-	-	-	-	-	51-9190
1	VL	24,070	L	H	VL	Moderate-term on-the-job training	HS	84.8	15.2	.0	51-9191
1	VL	23,250	L	VH	VL	Moderate-term on-the-job training	HS	85.9	9.2	5.0	51-9192
0	VL	22,790	L	L	VL	Moderate-term on-the-job training	HS/SC	73.6	21.2	5.2	51-9193
0	VL	23,560	L	H	VH	Long-term on-the-job training	HS/SC	56.5	30.9	12.6	51-9194
1	VL	24,080	L	H	L	Moderate-term on-the-job training	HS	74.5	18.2	7.3	51-9195
3	VL	30,430	H	H	VL	Moderate-term on-the-job training	HS/SC	76.5	20.1	3.4	51-9196
0	VL	36,390	H	VL	VL	Moderate-term on-the-job training	HS/SC	48.9	35.2	15.8	51-9197
17	L	20,180	VL	VH	H	Short-term on-the-job training	HS	80.4	15.1	4.5	51-9198
8	L	23,670	L	VH	VL	Moderate-term on-the-job training	HS/SC	73.4	21.6	5.0	51-9199
345	-	-	-	-	-	-	-	-	-	-	53-0000
15	-	-	-	-	-	-	-	-	-	-	53-1000
0	VL	34,100	H	L	L	Work experience in a related occupation	HS/SC	54.4	30.1	15.5	53-1011
5	VL	38,280	H	L	L	Work experience in a related occupation	HS/SC	54.4	30.1	15.5	53-1021
9	L	44,810	VH	L	L	Work experience in a related occupation	HS/SC	54.4	30.1	15.5	53-1031
6	-	-	-	-	-	-	-	-	-	-	53-2000
5	-	-	-	-	-	-	-	-	-	-	53-2010
4	VL	129,250	VH	VL	L	Bachelor's degree	C	3.3	19.1	77.6	53-2011
1	VL	53,870	VH	VL	L	Postsecondary vocational award	C	3.3	19.1	77.6	53-2012
1	-	-	-	-	-	-	-	-	-	-	53-2020
1	VL	102,030	VH	VL	VL	Long-term on-the-job training	SC/C	15.0	47.6	37.4	53-2021
0	VL	36,680	H	VL	VL	Long-term on-the-job training	SC/C	15.0	47.6	37.4	53-2022
126	-	-	-	-	-	-	-	-	-	-	53-3000
1	VL	19,740	VL	VL	VL	Moderate-term on-the-job training	HS/SC	43.9	45.6	10.5	53-3011
25	-	-	-	-	-	-	-	-	-	-	53-3020
8	L	29,730	H	L	VH	Moderate-term on-the-job training	HS/SC	61.4	32.7	5.9	53-3021
16	L	23,250	L	L	VH	Short-term on-the-job training	HS/SC	61.4	32.7	5.9	53-3022
90	-	-	-	-	-	-	-	-	-	-	53-3030
14	L	20,090	VL	H	L	Short-term on-the-job training	HS/SC	71.7	23.4	4.9	53-3031
51	H	33,520	H	H	L	Moderate-term on-the-job training	HS/SC	71.7	23.4	4.9	53-3032
26	H	24,540	L	H	L	Short-term on-the-job training	HS/SC	71.7	23.4	4.9	53-3033
6	VL	19,570	VL	H	H	Short-term on-the-job training	HS/SC	61.3	24.6	14.1	53-3041
4	VL	19,650	VL	H	VH	Short-term on-the-job training	HS	71.2	16.9	11.9	53-3099
4	-	-	-	-	-	-	-	-	-	-	53-4000
1	VL	50,540	VH	VL	VL	Moderate-term on-the-job training	HS/SC	50.5	42.0	7.6	53-4010
0	VL	44,640	VH	VL	VL	Moderate-term on-the-job training	HS/SC	63.5	25.0	11.5	53-4021
2	VL	46,340	VH	VL	VL	Moderate-term on-the-job training	HS/SC	47.3	42.3	10.3	53-4031
0	VL	49,290	VH	VH	VL	Moderate-term on-the-job training	HS/SC	62.9	30.1	7.0	53-4041
0	VL	40,710	H	VH	VL	Moderate-term on-the-job training	HS/SC	62.9	30.1	7.0	53-4099
3	-	-	-	-	-	-	-	-	-	-	53-5000
1	VL	29,120	H	VH	VL	Short-term on-the-job training	HS/SC	67.3	23.2	9.5	53-5011
1	-	-	-	-	-	-	-	-	-	-	53-5020
1	VL	50,340	VH	VH	VL	Work experience in a related occupation	HS	65.0	16.5	18.5	53-5021
0	VL	32,020	H	VH	VL	Moderate-term on-the-job training	HS	65.0	16.5	18.5	53-5022
1	VL	54,950	VH	VH	VL	Postsecondary vocational award	HS/SC	61.4	23.8	14.8	53-5031

See footnotes at end of table.

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation	Employment		Employment change, 2004-14				Percent self-employed, 2004	Annual average job openings due to growth and total replacement needs, 2004-14	
	2004	2014	Numeric		Percent			Number	Rank
			Number	Rank	Number	Rank			
53-6000 Other transportation workers.....	301	309	8	-	2.5	-	.3	61	-
53-6011 Bridge and lock tenders <sup>1,5</sup> .....	4	4	0	VL	7.2	VL	.0	0	VL
53-6021 Parking lot attendants.....	122	111	-11	VL	-8.7	VL	.0	28	VL
53-6031 Service station attendants.....	91	98	7	VL	7.5	VL	.3	26	VL
53-6041 Traffic technicians.....	6	7	1	VL	14.1	L	.0	1	VL
53-6051 Transportation inspectors.....	26	29	3	VL	11.4	L	1.9	2	VL
53-6099 Transportation workers, all other.....	52	60	7	VL	13.9	L	.0	4	VL
53-7000 Material moving occupations.....	4,887	5,292	405	-	8.3	-	1.2	1,176	-
53-7011 Conveyor operators and tenders <sup>3</sup> .....	53	58	4	VL	7.7	VL	.0	3	VL
53-7021 Crane and tower operators.....	44	48	4	VL	8.2	L	.0	4	VL
53-7030 Dredge, excavating, and loading machine operators.....	92	99	7	-	7.1	-	19.5	12	-
53-7031 Dredge operators.....	3	3	0	VL	3.7	VL	29.6	0	VL
53-7032 Excavating and loading machine and dragline operators.....	86	92	7	VL	8.0	L	19.1	11	VL
53-7033 Loading machine operators, underground mining.....	4	4	0	VL	-8.3	VL	22.4	0	VL
53-7041 Hoist and winch operators <sup>1,3</sup> .....	6	6	0	VL	7.0	VL	.0	1	VL
53-7051 Industrial truck and tractor operators.....	635	685	50	L	7.9	L	.2	114	H
53-7060 Laborers and material movers, hand.....	3,803	4,142	339	-	8.9	-	.8	997	-
53-7061 Cleaners of vehicles and equipment.....	347	376	29	L	8.3	L	3.3	111	H
53-7062 Laborers and freight, stock, and material movers, hand.....	2,430	2,678	248	VH	10.2	L	.6	671	VH
53-7063 Machine feeders and offbearers.....	148	122	-27	VL	-18.0	VL	.0	20	VL
53-7064 Packers and packagers, hand.....	877	966	89	H	10.1	L	.4	194	H
53-7070 Pumping station operators.....	27	21	-6	-	-22.6	-	6.5	5	-
53-7071 Gas compressor and gas pumping station operators <sup>2</sup> .....	5	4	-1	VL	-21.3	VL	7.8	1	VL
53-7072 Pump operators, except wellhead pumpers <sup>2</sup> .....	11	8	-2	VL	-22.2	VL	6.8	2	VL
53-7073 Wellhead pumpers <sup>2</sup> .....	11	8	-3	VL	-23.6	VL	5.6	2	VL
53-7081 Refuse and recyclable material collectors.....	149	163	13	VL	8.9	L	4.2	31	L
53-7111 Shuttle car operators <sup>1,5</sup> .....	3	2	-1	VL	-42.4	VL	.0	0	VL
53-7121 Tank car, truck, and ship loaders <sup>5</sup> .....	17	15	-2	VL	-11.0	VL	.0	2	VL
53-7199 Material moving workers, all other.....	58	55	-3	VL	-5.3	VL	.0	8	VL

**Table IV-1. Occupational employment and job openings data, 2004-14, and worker characteristics, 2004 — Continued**  
(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 2004-14		2004 median annual earnings		Unemployment rate	Percent part-time	Most significant source of postsecondary education or training <sup>6</sup>	Educational attainment cluster <sup>8</sup>	Percent of workers aged 25 to 44, by educational attainment			2004 National Employment Matrix occupation code
		Dollars	Rank					High school or less	Some college	Bachelor's or higher	
Number	Rank										
12	—	—	—	—	—	—	—	—	—	—	53-6000
0	VL	37,390	H	H	L	Short-term on-the-job training	HS/SC	63.7	26.8	9.5	53-6011
4	VL	16,800	VL	H	VH	Short-term on-the-job training	HS/SC	69.6	24.8	5.7	53-6021
5	VL	17,240	VL	VH	H	Short-term on-the-job training	HS/SC	71.1	20.8	8.1	53-6031
0	VL	33,670	H	H	L	Short-term on-the-job training	HS/SC	58.5	36.7	4.8	53-6041
1	VL	50,380	VH	L	VL	Work experience in a related occupation	HS/SC	44.3	36.1	19.6	53-6051
2	VL	32,170	H	H	L	Short-term on-the-job training	HS/SC	58.5	36.7	4.8	53-6099
180	—	—	—	—	—	—	—	—	—	—	53-7000
2	VL	25,430	L	H	VL	Short-term on-the-job training	HS	85.1	14.8	.1	53-7011
1	VL	37,410	H	VH	VL	Long-term on-the-job training	HS	79.8	19.6	.6	53-7021
3	—	—	—	—	—	—	—	—	—	—	53-7030
0	VL	28,020	L	H	VL	Moderate-term on-the-job training	HS	79.9	16.2	3.9	53-7031
3	VL	31,970	H	H	VL	Moderate-term on-the-job training	HS	79.9	16.2	3.9	53-7032
0	VL	33,250	H	H	VL	Moderate-term on-the-job training	HS	79.9	16.2	3.9	53-7033
0	VL	33,680	H	VH	VL	Moderate-term on-the-job training	HS	77.6	19.5	2.9	53-7041
17	L	26,580	L	VH	VL	Short-term on-the-job training	HS	80.9	16.2	2.9	53-7051
149	—	—	—	—	—	—	—	—	—	—	53-7060
15	L	17,490	VL	VH	H	Short-term on-the-job training	HS	79.7	17.0	3.3	53-7061
104	VH	20,120	VL	VH	H	Short-term on-the-job training	HS/SC	71.3	23.3	5.5	53-7062
4	VL	22,210	L	VH	L	Short-term on-the-job training	HS	85.7	11.4	2.9	53-7063
25	H	17,150	VL	VH	L	Short-term on-the-job training	HS	82.7	13.2	4.1	53-7064
1	—	—	—	—	—	—	—	—	—	—	53-7070
0	VL	43,820	VH	VL	VL	Moderate-term on-the-job training	HS/SC	52.8	42.8	4.3	53-7071
0	VL	35,450	H	VL	VL	Moderate-term on-the-job training	HS/SC	52.8	42.8	4.3	53-7072
0	VL	33,930	H	VL	VL	Moderate-term on-the-job training	HS/SC	52.8	42.8	4.3	53-7073
5	VL	25,760	L	VH	L	Short-term on-the-job training	HS	82.6	10.1	7.2	53-7081
0	VL	37,610	H	H	VL	Short-term on-the-job training	HS	76.0	19.6	4.4	53-7111
0	VL	32,440	H	VH	VL	Moderate-term on-the-job training	HS	76.0	19.6	4.4	53-7121
2	VL	28,850	H	H	VL	Moderate-term on-the-job training	HS/SC	65.9	30.2	3.9	53-7199

<sup>1</sup> One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

<sup>2</sup> Denotes that the source for educational attainment information is CPS data for 25- to 44-year-olds over the 2000-04 period. CPS weighted employment exceeds 7,000.

<sup>3</sup> Denotes that the source for educational attainment information is CPS data for age 25-years-and-older age group over the 2000-04 period. CPS weighted employment exceeds 7,000.

<sup>4</sup> Denotes that the source for educational attainment information is CPS data for age 16-years-and-older age group over the 2000-04 period. CPS weighted employment exceeds 7,000.

<sup>5</sup> Denotes that the source for educational attainment information is the data for the summary occupation at one level of detail higher. The source for the summary occupation is CPS data for 25- to 44-year-olds over the 2002-04 period. CPS weighted employment exceeds 10,000.

<sup>6</sup> An occupation is placed into one of 11 categories that best describes the postsecondary education or training needed by most workers to become fully qualified in the occupation.

<sup>7</sup> Bachelor's or higher degree, plus work experience.

<sup>8</sup> The job types are presented in the following categories: HS = high school occupations, HS/SC = high school/some college occupations, SC = some college occupations, HS/SC/C = high school/some college/college occupations, SC/C = some college/college occupations, and C = college occupations

NOTE: Rankings are based on employment in all detailed occupations in the National Employment Matrix. For details, see "Data presented" section of text. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, and VL = Very low. A dash indicates data are not applicable.

Quartile ranking data ranges are available at <http://www.bls.gov/emp/empqrank.htm>.

**Table IV-2. Employment for occupations not presented in the National Employment Matrix, 2004**  
(Numbers in thousands)

2004 National Employment Matrix occupation code and title		Occupation type	2004 employment
<b>25-1000</b>	<b>Postsecondary teachers.....</b>	<b>Line item</b>	<b>1,628</b>
25-1011	Business teachers, postsecondary.....	Exclude	85
25-1021	Computer science teachers, postsecondary.....	Exclude	45
25-1022	Mathematical science teachers, postsecondary.....	Exclude	53
25-1031	Architecture teachers, postsecondary.....	Exclude	7
25-1032	Engineering teachers, postsecondary.....	Exclude	42
25-1041	Agricultural sciences teachers, postsecondary.....	Exclude	13
25-1042	Biological science teachers, postsecondary.....	Exclude	76
25-1043	Forestry and conservation science teachers, postsecondary.....	Exclude	4
25-1051	Atmospheric, earth, marine, and space sciences teachers, postsecondary.....	Exclude	11
25-1052	Chemistry teachers, postsecondary.....	Exclude	23
25-1053	Environmental science teachers, postsecondary.....	Exclude	5
25-1054	Physics teachers, postsecondary.....	Exclude	16
25-1061	Anthropology and archeology teachers, postsecondary.....	Exclude	6
25-1062	Area, ethnic, and cultural studies teachers, postsecondary.....	Exclude	10
25-1063	Economics teachers, postsecondary.....	Exclude	15
25-1064	Geography teachers, postsecondary.....	Exclude	5
25-1065	Political science teachers, postsecondary.....	Exclude	17
25-1066	Psychology teachers, postsecondary.....	Exclude	37
25-1067	Sociology teachers, postsecondary.....	Exclude	18
25-1069	Social sciences teachers, postsecondary, all other.....	Exclude	8
25-1071	Health specialties teachers, postsecondary.....	Exclude	150
25-1072	Nursing instructors and teachers, postsecondary.....	Exclude	41
25-1081	Education teachers, postsecondary.....	Exclude	60
25-1082	Library science teachers, postsecondary.....	Exclude	5
25-1111	Criminal justice and law enforcement teachers, postsecondary.....	Exclude	11
25-1112	Law teachers, postsecondary.....	Exclude	16
25-1113	Social work teachers, postsecondary.....	Exclude	9
25-1121	Art, drama, and music teachers, postsecondary.....	Exclude	78
25-1122	Communications teachers, postsecondary.....	Exclude	26
25-1123	English language and literature teachers, postsecondary.....	Exclude	69
25-1124	Foreignlanguage and literature teachers, postsecondary.....	Exclude	27
25-1125	History teachers, postsecondary.....	Exclude	24
25-1126	Philosophy and religion teachers, postsecondary.....	Exclude	23
25-1191	Graduate teaching assistants.....	Exclude	143
25-1192	Home economics teachers, postsecondary.....	Exclude	5
25-1193	Recreation and fitness studies teachers, postsecondary.....	Exclude	18
25-1194	Vocational education teachers, postsecondary.....	Exclude	127
25-1198	All other postsecondary teachers.....	Exclude	300
<b>29-1060</b>	<b>Physicians and surgeons.....</b>	<b>Line item</b>	<b>567</b>
29-1061	Anesthesiologists.....	Exclude	30
29-1062	Family and general practitioners.....	Exclude	130
29-1063	Internists, general.....	Exclude	61
29-1064	Obstetricians and gynecologists.....	Exclude	25
29-1065	Pediatricians, general.....	Exclude	32
29-1066	Psychiatrists.....	Exclude	26
29-1067	Surgeons.....	Exclude	65
29-1069	Physicians and surgeons, all other.....	Exclude	198
<b>45-1000</b>	<b>Supervisors, farming, fishing, and forestry workers.....</b>	<b>Summary</b>	<b>61</b>
45-1011	First-line supervisors/managers of farming, fishing, and forestry workers.....	Exclude	59
45-1012	Farm labor contractors.....	Exclude	1
<b>53-4010</b>	<b>Locomotive engineers and operators.....</b>	<b>Line item</b>	<b>40</b>
53-4011	Locomotive engineers.....	Exclude	33
53-4012	Locomotive firers.....	Exclude	1
53-4013	Rail yard engineers, dinkey operators, and hostlers.....	Exclude	6

# Chapter V. Factors Affecting Industry Employment and Occupational Utilization, 2004–14

Occupational employment may change over time, for several reasons. For example, an occupation's employment could increase because of growing demand for goods and services produced by industries in which the employment is concentrated. Alternatively, increases in the utilization of an occupation in those industries could boost the occupation's overall employment. This chapter presents information about both categories of factors—those affecting industry employment and those affecting occupational utilization within industries—that drive changes in occupational employment.

## Industry employment

Many assumptions underlie the Bureau of Labor Statistics (BLS) projections of the aggregate economy and of industry output, productivity, and employment. Often, these assumptions bear specifically on macroeconomic factors, such as the aggregate unemployment rate, the anticipated time path of labor productivity, and expectations regarding the Federal budget surplus or deficit. Other assumptions deal with factors that affect industry-specific measures of economic activity.

Detailed industry employment projections are based largely on time-series models, which, by their very nature, project future economic behavior on the basis of a continuation of economic relationships that held in the past. For the most part, the determinants of industry employment are expressed both in the structure of the models' equations and as adjustments imposed on the specific equations to ensure that the models are indeed making a smooth transition from actual historical data to projected results. However, one of the most important steps associated with the preparation of the BLS projections is a detailed review of the results by analysts who have studied recent economic trends in specific industries. In some cases, the results of the aggregate and industry models are modified because of the analysts' judgment that historical relationships need to be redefined in some manner.

As discussed in Chapter III, the 2002–12 projections were the first to incorporate the 2002 North American Industry Classification System (NAICS). Table V-1 presents historical and projected information about employment and output for aggregate and detailed industries. Industry sector employment projections prepared in the Division of Industry Employment Projections (DIEP) used a comprehensive modeling technique that estimates output as well as employment.

More detailed industry employment projections based on historical time series information are included in the matrix and are consistent with their parent industry sector; however, projections of output were not developed for these industries. Specific factors that underlie the projections of industry employment for DIEP sectors are presented in table V-2 to allow the user to better understand the rationale behind projected changes in industry employment and output.

## Occupational utilization

BLS projections of wage and salary employment are developed within the framework of an industry-occupation matrix, which shows the occupational distribution in an industry. Historical data indicate that the occupational distribution of industries shifts over time as the utilization of some occupations changes relative to that of other occupations.

Among the various factors that can affect the utilization of workers in an occupation in particular industries are several kinds of changes: in technology, business practices, the mix of goods and services produced, and the size of business establishments. BLS staff analyze each occupation in the matrix to identify the factors that are likely to cause an increase or decrease in utilization of the occupation within a particular industry in the future. The analyses incorporate judgments about new trends that may influence occupational utilization, such as the use of the Internet and electronic commerce. Table V-3 contains brief descriptions of the factors underlying changes in occupational utilization within industries projected to occur between 2004 and 2014. Occupations appear in order by Standard Occupational Classification code. Although all detailed occupations were analyzed, utilization for many occupations was projected to remain unchanged. These occupations are not included in the table. In addition, factors are discussed for only the most significant industries—those with the highest share of an occupation's employment.

In developing the projections, BLS staff made hundreds of analytical decisions of the kind set forth in the preceding paragraph. To maintain consistency among analysts, guidelines for changing distributions were established as follows: small change =  $\pm 10$  percent; moderate change =  $\pm 20$  percent; large change =  $\pm 35$  percent; very large change =  $\pm 50$  percent.

**Table V-1. Employment and output by industry, 1994, 2004, and projected 2014**

2002 NAICS coverage	Industry title	Employment							Output				
		Thousands of jobs			Change		Average annual rate of change		Billions of chained 2000 dollars			Average annual rate of change	
		1994	2004	2014	1994-2004	2004-2014	1994-2004	2004-2014	1994	2004	2014	1994-2004	2004-2014
<b>N.A.</b>	<b>Nonagriculture wage and salary<sup>1</sup></b>	<b>114,984</b>	<b>132,192</b>	<b>150,877</b>	<b>17,208</b>	<b>18,685</b>	<b>1.4</b>	<b>1.3</b>	<b>13,850</b>	<b>19,003</b>	<b>27,089</b>	<b>3.2</b>	<b>3.6</b>
210000	Mining.....	577	523	477	-53	-46	-1.0	-0.9	211	224	230	.6	.2
211000	Oil and gas extraction.....	162	123	107	-39	-16	-2.7	-1.4	145	137	144	-.6	.5
212000	Mining (except oil and gas) .....	255	207	180	-48	-27	-2.1	-1.4	46	48	49	.5	.3
212100	Coal mining .....	104	72	55	-32	-17	-3.6	-2.6	20	23	24	1.0	.7
212200	Metal ore mining.....	46	27	19	-19	-8	-5.1	-3.4	9	7	5	-2.9	-1.9
212300	Nonmetallic mineral mining and quarrying.....	106	108	106	2	-2	.2	-.2	16	18	19	1.2	.4
213000	Support activities for mining .....	159	193	190	34	-3	2.0	-.2	24	39	38	4.7	-.1
220000	Utilities.....	689	570	563	-119	-7	-1.9	-.1	305	323	351	.6	.8
221100	Electric power generation, transmission and distribution.....	505	412	400	-92	-12	-2.0	-.3	225	256	298	1.3	1.5
221200	Natural gas distribution.....	148	112	107	-36	-5	-2.8	-.5	75	60	46	-2.3	-2.6
221300	Water, sewage and other systems .....	37	46	56	9	10	2.3	1.9	6	7	9	2.0	2.3
230000	Construction .....	5,095	6,965	7,757	1,870	792	3.2	1.1	685	841	1,044	2.1	2.2
236000	Construction of buildings .....	1,301	1,632	1,803	331	171	2.3	1.0	-	-	-	-	-
236100	Residential building construction.....	626	894	953	268	59	3.6	.6	-	-	-	-	-
236200	Nonresidential building construction.....	675	738	850	64	112	.9	1.4	-	-	-	-	-
237000	Heavy and civil engineering construction .....	762	903	967	141	65	1.7	.7	-	-	-	-	-
237100	Utility system construction .....	301	370	400	69	30	2.1	.8	-	-	-	-	-
237130	Power and communication line and related structures construction .....	95	115	125	20	10	2.0	.8	-	-	-	-	-
237110	Water and sewer system and all other utility system construction .....	206	255	275	49	20	2.1	.8	-	-	-	-	-
237200	Land subdivision.....	79	86	86	7	0	.8	0.0	-	-	-	-	-
237300	Highway, street, and bridge construction.....	274	348	380	74	32	2.4	.9	-	-	-	-	-
237900	Other heavy and civil engineering construction .....	108	99	101	-9	2	-.9	.2	-	-	-	-	-
238000	Specialty trade contractors.....	3,033	4,430	4,987	1,397	557	3.9	1.2	-	-	-	-	-
238100	Foundation, structure, and building exterior contractors.....	683	1,006	1,149	323	143	3.9	1.3	-	-	-	-	-
238110	Poured concrete foundation and structure contractors.....	141	218	250	77	32	4.5	1.4	-	-	-	-	-
238140	Masonry contractors .....	168	231	260	63	29	3.2	1.2	-	-	-	-	-
238160	Roofing contractors .....	152	186	219	35	33	2.1	1.6	-	-	-	-	-
238120, 30,50,70,90	Framing contractors and all other foundation, structure, and building exterior contractors.....	222	370	420	148	50	5.3	1.3	-	-	-	-	-
238200	Building equipment contractors .....	1,327	1,863	2,127	535	265	3.4	1.3	-	-	-	-	-
238210	Electrical contractors .....	635	855	955	220	100	3.0	1.1	-	-	-	-	-
238220	Plumbing, heating, and air-conditioning contractors.....	604	897	1,050	293	153	4.0	1.6	-	-	-	-	-
238290	Other building equipment contractors .....	88	110	122	22	12	2.2	1.0	-	-	-	-	-
238300	Building finishing contractors.....	622	926	1,010	304	84	4.1	.9	-	-	-	-	-
238310	Drywall and insulation contractors.....	232	338	350	106	12	3.8	.4	-	-	-	-	-
238320	Painting and wall covering contractors .....	168	223	250	55	27	2.9	1.2	-	-	-	-	-
238330-50,90	Finish carpentry contractors and all other building finishing contractors.....	223	365	410	142	45	5.1	1.2	-	-	-	-	-
238900	Other specialty trade contractors .....	400	636	700	236	65	4.7	1.0	-	-	-	-	-
31-33	Manufacturing.....	17,020	14,330	13,553	-2,691	-776	-1.7	-.6	3,345	4,155	5,871	2.2	3.5
311000	Food manufacturing .....	1,539	1,498	1,555	-42	57	-.3	.4	384	420	499	.9	1.7
311100	Animal food manufacturing.....	56	51	48	-6	-3	-1.0	-.5	20	23	30	1.7	2.6
311200	Grain and oilseed milling .....	70	61	57	-9	-4	-1.4	-.7	40	39	51	0.0	2.6
311300	Sugar and confectionery product manufacturing.....	99	84	80	-16	-4	-1.7	-.5	22	25	28	1.3	1.4
311400	Fruit and vegetable preserving and specialty food manufacturing.....	217	182	179	-35	-3	-1.7	-.1	46	55	63	1.7	1.4
311500	Dairy product manufacturing .....	138	132	118	-6	-14	-.4	-1.1	58	57	66	-.2	1.6
311600	Animal slaughtering and processing.....	456	505	570	50	65	1.0	1.2	98	107	125	.8	1.6
311700	Seafood product preparation and packaging .....	53	42	40	-11	-2	-2.4	-.4	9	10	12	1.1	1.8
311800	Bakeries and tortilla manufacturing .....	301	288	299	-13	11	-.4	.4	43	47	57	.9	2.0

See footnotes at end of table.

**Table V-1. Employment and output by industry, 1994, 2004, and projected 2014 — Continued**

2002 NAICS coverage	Industry title	Employment							Output				
		Thousands of jobs			Change		Average annual rate of change		Billions of chained 2000 dollars			Average annual rate of change	
		1994	2004	2014	1994-2004	2004-2014	1994-2004	2004-2014	1994	2004	2014	1994-2004	2004-2014
311900	Other food manufacturing.....	149	154	164	5	10	.3	.6	50	58	67	1.5	1.3
312000	Beverage and tobacco product manufacturing.....	205	194	181	-10	-14	-.5	-.7	126	110	102	-1.4	-.7
312100	Beverage manufacturing .....	165	165	164	0	-1	0.0	-.1	67	68	81	.2	1.7
312200	Tobacco manufacturing .....	40	29	17	-10	-13	-2.9	-5.6	61	43	26	-3.5	-4.9
313000	Textile mills .....	478	239	120	-239	-119	-6.7	-6.6	54	42	30	-2.5	-3.2
313100	Fiber, yarn, and thread mills .....	96	54	25	-42	-29	-5.5	-7.5	12	10	8	-1.4	-2.4
313200	Fabric mills .....	252	116	60	-136	-56	-7.5	-6.4	29	20	14	-3.4	-3.7
313300	Textile and fabric finishing and fabric coating mills.....	130	69	35	-62	-34	-6.2	-6.5	14	11	8	-1.8	-2.8
314000	Textile product mills .....	219	178	145	-41	-33	-2.1	-2.0	29	36	46	2.3	2.5
314100	Textile furnishings mills.....	129	103	90	-27	-13	-2.3	-1.3	19	25	35	3.2	3.1
314900	Other textile product mills.....	90	75	55	-14	-20	-1.7	-3.1	10	11	11	.5	.7
315000	Apparel manufacturing .....	856	285	115	-571	-170	-10.4	-8.7	68	55	41	-2.1	-2.9
315100	Apparel knitting mills.....	108	42	20	-66	-22	-9.0	-7.2	11	8	6	-3.4	-3.5
315200	Cut and sew apparel manufacturing.....	704	220	80	-484	-140	-11.0	-9.6	52	44	33	-1.7	-2.9
315900	Apparel accessories and other apparel manufacturing.....	44	23	15	-21	-8	-6.3	-4.2	5	4	3	-3.0	-1.5
316000	Leather and allied product manufacturing ...	114	43	33	-71	-10	-9.3	-2.7	10	9	9	-1.0	-.8
316200	Footwear manufacturing.....	65	19	13	-45	-7	-11.3	-4.3	5	3	3	-3.6	-2.0
321000	Wood product manufacturing .....	561	548	588	-12	40	-.2	.7	81	101	124	2.2	2.1
321100	Sawmills and wood preservation .....	139	118	96	-21	-22	-1.7	-2.0	25	30	38	1.9	2.1
321200	Veneer, plywood, and engineered wood product manufacturing.....	102	117	125	15	8	1.4	.7	18	21	27	1.5	2.5
321900	Other wood product manufacturing .....	319	314	367	-6	53	-.2	1.6	38	49	59	2.8	1.8
322000	Paper manufacturing .....	639	499	487	-140	-12	-2.4	-.2	161	171	184	.6	.8
322100	Pulp, paper, and paperboard mills.....	225	147	124	-78	-23	-4.2	-1.7	74	83	87	1.2	.5
322200	Converted paper product manufacturing...	415	352	363	-63	11	-1.6	.3	88	88	97	0.0	1.0
323000	Printing and related support activities .....	802	665	600	-137	-65	-1.9	-1.0	97	92	103	-.5	1.1
324000	Petroleum and coal products manufacturing	144	113	97	-31	-16	-2.4	-1.5	214	249	268	1.5	.7
325000	Chemical manufacturing.....	1,005	887	877	-118	-10	-1.2	-.1	403	452	539	1.2	1.8
325100	Basic chemical manufacturing.....	235	156	110	-78	-46	-4.0	-3.4	119	111	110	-.6	-.1
325200	Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing.....	142	109	86	-33	-23	-2.6	-2.4	63	65	77	.2	1.7
325300	Pesticide, fertilizer, and other agricultural chemical manufacturing .....	51	41	34	-10	-7	-2.1	-1.9	21	20	19	-.6	-.5
325400	Pharmaceutical and medicine manufacturing.....	231	291	367	61	76	2.4	2.3	90	125	173	3.3	3.3
325500	Paint, coating, and adhesive manufacturing.....	80	68	64	-12	-5	-1.6	-.7	26	26	29	0.0	1.1
325600	Soap, cleaning compound, and toilet preparation manufacturing .....	126	114	120	-12	6	-1.0	.5	48	63	77	2.7	2.0
325900	Other chemical product and preparation manufacturing.....	141	108	97	-33	-11	-2.6	-1.0	36	43	54	1.7	2.3
326000	Plastics and rubber products manufacturing	889	807	733	-83	-74	-1.0	-1.0	142	192	276	3.1	3.7
326100	Plastics product manufacturing .....	685	634	600	-51	-34	-.8	-.5	112	162	247	3.7	4.3
326200	Rubber product manufacturing .....	205	173	133	-32	-40	-1.7	-2.6	30	30	28	.1	-.6
327000	Nonmetallic mineral product manufacturing	505	505	525	-1	20	0.0	.4	80	86	101	.8	1.6
327100	Clay product and refractory manufacturing	83	66	69	-17	4	-2.3	.6	9	8	10	-1.3	2.5
327200	Glass and glass product manufacturing ....	145	112	98	-32	-15	-2.5	-1.4	20	22	27	1.1	2.0
327300	Cement and concrete product manufacturing.....	189	235	260	46	25	2.2	1.0	32	37	42	1.4	1.2
331000	Primary metal manufacturing .....	630	466	380	-165	-86	-3.0	-2.0	153	142	148	-.7	.4
331100	Iron and steel mills and ferroalloy manufacturing.....	155	95	80	-59	-15	-4.7	-1.7	49	40	47	-1.9	1.6
331200	Steel product manufacturing from purchased steel.....	68	61	55	-7	-6	-1.1	-1.0	18	14	16	-2.8	1.6

See footnotes at end of table.

**Table V-1. Employment and output by industry, 1994, 2004, and projected 2014 — Continued**

2002 NAICS coverage	Industry title	Employment							Output				
		Thousands of jobs			Change		Average annual rate of change		Billions of chained 2000 dollars			Average annual rate of change	
		1994	2004	2014	1994-2004	2004-2014	1994-2004	2004-2014	1994	2004	2014	1994-2004	2004-2014
331300	Alumina and aluminum production and processing .....	98	73	57	-25	-16	-2.9	-2.5	35	35	32	.1	-9
331400	Nonferrous metal (except aluminum) production and processing .....	104	71	60	-32	-11	-3.7	-1.7	26	25	26	-.6	.7
331500	Foundries .....	207	165	128	-41	-38	-2.2	-2.5	25	29	27	1.7	-1.0
332000	Fabricated metal product manufacturing .....	1,565	1,498	1,470	-68	-28	-.4	-.2	214	254	306	1.7	1.9
332100	Forging and stamping .....	131	110	100	-22	-10	-1.8	-.9	21	24	25	1.3	.7
332200	Cutlery and handtool manufacturing .....	78	59	55	-19	-4	-2.7	-.7	11	12	15	1.3	1.9
332300	Architectural and structural metals manufacturing .....	343	390	399	46	9	1.3	.2	46	57	70	2.3	2.0
332400	Boiler, tank, and shipping container manufacturing .....	106	92	85	-14	-7	-1.4	-.8	22	23	24	.5	.3
332500	Hardware manufacturing .....	55	38	35	-17	-4	-3.6	-1.0	11	11	13	-.4	2.3
332600	Spring and wire product manufacturing .....	81	62	50	-19	-12	-2.6	-2.1	7	8	8	1.1	-.3
332700	Machine shops; turned product; and screw, nut, and bolt manufacturing .....	313	326	340	13	14	.4	.4	35	45	64	2.7	3.4
332710	Machine shops .....	215	240	261	25	20	1.1	.8	-	-	-	-	-
332720	Turned product and screw, nut, and bolt manufacturing .....	98	86	79	-12	-7	-1.3	-.8	-	-	-	-	-
332800	Coating, engraving, heat treating, and allied activities .....	148	142	150	-5	8	-.4	.5	16	20	28	2.6	3.4
332900	Other fabricated metal product manufacturing .....	310	278	257	-32	-22	-1.1	-.8	47	53	59	1.3	1.1
333000	Machinery manufacturing .....	1,379	1,142	995	-238	-147	-1.9	-1.4	225	273	298	2.0	.9
333100	Agriculture, construction, and mining machinery manufacturing .....	211	195	190	-16	-5	-.8	-.3	43	50	54	1.5	.8
333200	Industrial machinery manufacturing .....	149	119	104	-30	-15	-2.2	-1.3	29	34	37	1.5	.8
333300	Commercial and service industry machinery manufacturing .....	142	115	85	-27	-30	-2.1	-3.0	24	26	22	.8	-1.5
333400	Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing .....	173	152	139	-21	-13	-1.3	-.9	27	36	42	2.7	1.7
333500	Metalworking machinery manufacturing .....	258	202	169	-56	-33	-2.4	-1.8	26	28	29	.8	.2
333600	Engine, turbine, and power transmission equipment manufacturing .....	114	93	78	-21	-15	-2.1	-1.7	23	37	43	4.7	1.5
333900	Other general purpose machinery manufacturing .....	333	266	230	-67	-36	-2.2	-1.4	52	62	71	1.9	1.3
334000	Computer and electronic product manufacturing .....	1,651	1,326	1,232	-325	-94	-2.2	-.7	203	543	1,795	10.4	12.7
334100	Computer and peripheral equipment manufacturing .....	298	212	175	-86	-37	-3.3	-1.9	26	172	1,368	21.0	23.1
334200	Communications equipment manufacturing .....	218	151	135	-68	-16	-3.6	-1.1	53	92	319	5.8	13.2
334300	Audio and video equipment manufacturing .....	58	32	25	-26	-7	-5.7	-2.4	9	6	6	-4.2	.3
334400	Semiconductor and other electronic component manufacturing .....	535	453	400	-83	-53	-1.7	-1.2	50	167	265	12.8	4.7
334500	Navigational, measuring, electromedical, and control instruments manufacturing .....	493	432	450	-62	18	-1.3	.4	80	108	154	3.1	3.6
334600	Manufacturing and reproducing magnetic and optical media .....	49	47	47	-2	0	-.4	0.0	8	14	19	5.2	3.1
335000	Electrical equipment, appliance, and component manufacturing .....	589	447	363	-142	-84	-2.7	-2.1	100	103	128	.3	2.2
335100	Electric lighting equipment manufacturing .....	78	65	55	-13	-10	-1.8	-1.7	11	12	14	.8	1.4
335200	Household appliance manufacturing .....	113	90	66	-23	-24	-2.2	-3.1	21	22	29	.4	2.9
335300	Electrical equipment manufacturing .....	218	153	117	-65	-36	-3.5	-2.7	32	31	32	-.3	.5
335900	Other electrical equipment and component manufacturing .....	180	139	125	-41	-14	-2.6	-1.0	37	39	53	.7	3.2
336000	Transportation equipment manufacturing .....	1,936	1,764	1,859	-173	95	-.9	.5	515	634	898	2.1	3.5
336100	Motor vehicle manufacturing .....	282	256	262	-25	5	-.9	.2	194	252	325	2.7	2.6
336200	Motor vehicle body and trailer manufacturing .....	151	165	178	13	13	.8	.8	22	26	39	1.6	4.2
336300	Motor vehicle parts manufacturing .....	736	689	732	-47	43	-.7	.6	154	198	286	2.6	3.7

See footnotes at end of table.

**Table V-1. Employment and output by industry, 1994, 2004, and projected 2014 — Continued**

2002 NAICS coverage	Industry title	Employment							Output				
		Thousands of jobs			Change		Average annual rate of change		Billions of chained 2000 dollars			Average annual rate of change	
		1994	2004	2014	1994-2004	2004-2014	1994-2004	2004-2014	1994	2004	2014	1994-2004	2004-2014
336400	Aerospace product and parts manufacturing.....	552	444	480	-109	36	-2.2	.8	109	122	197	1.1	4.9
336500	Railroad rolling stock manufacturing.....	33	25	19	-8	-6	-2.7	-2.6	7	6	7	-1.4	1.4
336600	Ship and boat building.....	145	148	145	3	-3	.2	-.2	16	19	26	1.2	3.3
336900	Other transportation equipment manufacturing.....	38	38	44	0	6	.1	1.5	13	12	17	-.4	3.6
337000	Furniture and related product manufacturing.....	600	573	563	-28	-10	-.5	-.2	56	71	91	2.3	2.5
337100	Household and institutional furniture and kitchen cabinet manufacturing.....	399	384	375	-14	-10	-.4	-.2	34	41	51	2.1	2.1
337110	Wood kitchen cabinet and countertop manufacturing.....	114	161	179	47	18	3.5	1.1	-	-	-	-	-
337120	Household and institutional furniture manufacturing.....	285	223	196	-62	-28	-2.4	-1.3	-	-	-	-	-
337200	Office furniture (including fixtures) manufacturing.....	154	136	138	-18	2	-1.3	.1	17	23	32	3.0	3.3
337900	Other furniture related product manufacturing.....	47	52	50	5	-2	1.0	-.4	6	7	8	1.7	1.8
339000	Miscellaneous manufacturing.....	714	656	637	-58	-19	-.8	-.3	93	138	198	4.1	3.7
339100	Medical equipment and supplies manufacturing.....	296	304	312	9	8	.3	.3	39	69	109	5.8	4.7
339900	Other miscellaneous manufacturing.....	418	352	325	-67	-27	-1.7	-.8	54	69	89	2.6	2.6
339910	Jewelry and silverware manufacturing....	67	44	29	-23	-15	-4.1	-4.1	-	-	-	-	-
339920-50,90	Signs, sporting and athletic goods, and all other miscellaneous manufacturing.....	351	307	296	-43	-12	-1.3	-.4	-	-	-	-	-
420000	Wholesale trade.....	5,248	5,655	6,131	407	476	.8	.8	595	971	1,813	5.0	6.4
423000	Merchant wholesalers, durable goods.....	2,786	2,949	3,268	163	319	.6	1.0	-	-	-	-	-
423100	Motor vehicle and motor vehicle parts and supplies merchant wholesalers....	320	340	379	20	39	.6	1.1	-	-	-	-	-
423200	Furniture and home furnishing merchant wholesalers.....	97	110	117	13	7	1.3	.6	-	-	-	-	-
423300	Lumber and other construction materials merchant wholesalers.....	182	240	269	57	29	2.8	1.2	-	-	-	-	-
423400	Professional and commercial equipment and supplies merchant wholesalers.....	589	643	746	55	103	.9	1.5	-	-	-	-	-
423500	Metal and mineral (except petroleum) merchant wholesalers.....	122	121	130	-1	9	-.1	.7	-	-	-	-	-
423600	Electrical and electronic goods merchant wholesalers.....	341	340	395	-1	55	-0.0	1.5	-	-	-	-	-
423700	Hardware, and plumbing and heating equipment and supplies merchant wholesalers.....	215	234	259	19	24	.9	1.0	-	-	-	-	-
423800	Machinery, equipment, and supplies merchant wholesalers.....	655	653	676	-3	24	-0.0	.4	-	-	-	-	-
423820	Farm and garden machinery and equipment merchant wholesalers.....	104	100	96	-4	-5	-.4	-.5	-	-	-	-	-
423810, 30-60	Industrial machinery and all other machinery, equipment, and supplies merchant wholesalers....	551	552	580	1	28	0.0	.5	-	-	-	-	-
423900	Miscellaneous durable goods merchant wholesalers.....	266	268	298	2	29	.1	1.0	-	-	-	-	-
424000	Merchant wholesalers, nondurable goods.....	1,927	2,007	2,077	80	70	.4	.3	-	-	-	-	-
424100	Paper and paper product merchant wholesalers.....	164	150	156	-14	6	-.9	.4	-	-	-	-	-
424200	Drugs and druggists' sundries merchant wholesalers.....	146	219	254	73	35	4.2	1.5	-	-	-	-	-
424300	Apparel, piece goods, and notions merchant wholesalers.....	160	146	144	-14	-2	-.9	-.1	-	-	-	-	-
424400	Grocery and related product wholesalers..	638	688	722	49	34	.7	.5	-	-	-	-	-
424500	Farm product raw material merchant wholesalers.....	93	73	54	-20	-19	-2.4	-3.0	-	-	-	-	-
424600	Chemical and allied products merchant wholesalers.....	125	132	146	7	15	.5	1.1	-	-	-	-	-

See footnotes at end of table.

**Table V-1. Employment and output by industry, 1994, 2004, and projected 2014 — Continued**

2002 NAICS coverage	Industry title	Employment							Output				
		Thousands of jobs			Change		Average annual rate of change		Billions of chained 2000 dollars			Average annual rate of change	
		1994	2004	2014	1994-2004	2004-2014	1994-2004	2004-2014	1994	2004	2014	1994-2004	2004-2014
424700	Petroleum and petroleum products merchant wholesalers .....	128	101	70	-27	-30	-2.4	-3.5	-	-	-	-	-
424800	Beer, wine, and distilled alcoholic beverage merchant wholesalers ..	117	143	153	26	11	2.0	.7	-	-	-	-	-
424900	Miscellaneous nondurable goods merchant wholesalers .....	357	357	378	0	21	0.0	.6	-	-	-	-	-
425000	Wholesale electronic markets and agents and brokers .....	534	699	785	164	87	2.7	1.2	-	-	-	-	-
44-45	Retail trade .....	13,491	15,035	16,683	1,543	1,649	1.1	1.0	741	1,125	1,757	4.3	4.6
441000	Motor vehicle and parts dealers .....	1,565	1,901	2,125	336	223	2.0	1.1	-	-	-	-	-
441100	Automobile dealers .....	1,032	1,254	1,407	222	153	2.0	1.2	-	-	-	-	-
441200	Other motor vehicle dealers .....	91	157	181	67	24	5.7	1.4	-	-	-	-	-
441300	Automotive parts, accessories, and tire stores.....	443	490	537	47	47	1.0	.9	-	-	-	-	-
442000	Furniture and home furnishings stores.....	442	560	641	119	81	2.4	1.4	-	-	-	-	-
442100	Furniture stores .....	246	289	325	43	35	1.6	1.2	-	-	-	-	-
442200	Home furnishings stores.....	196	271	317	75	46	3.3	1.6	-	-	-	-	-
443000	Electronics and appliance stores.....	417	514	608	97	94	2.1	1.7	-	-	-	-	-
444000	Building material and garden equipment and supplies dealers .....	946	1,226	1,405	280	179	2.6	1.4	-	-	-	-	-
444100	Building material and supplies dealers .....	803	1,081	1,241	278	160	3.0	1.4	-	-	-	-	-
444200	Lawn and garden equipment and supplies stores .....	143	145	164	2	19	.1	1.2	-	-	-	-	-
445000	Food and beverage stores .....	2,825	2,826	3,021	1	195	0.0	.7	-	-	-	-	-
445100	Grocery stores.....	2,450	2,447	2,607	-3	160	-0.0	.6	-	-	-	-	-
445200	Specialty food stores .....	240	244	276	4	33	.2	1.3	-	-	-	-	-
445300	Beer, wine, and liquor stores .....	135	136	138	1	2	.1	.1	-	-	-	-	-
446000	Health and personal care stores .....	797	942	1,096	145	154	1.7	1.5	-	-	-	-	-
446110	Pharmacies and drug stores .....	595	684	774	89	90	1.4	1.2	-	-	-	-	-
446120, 30,90	Cosmetic, beauty supply, and all other health and personal care stores ...	202	258	322	56	64	2.5	2.2	-	-	-	-	-
447000	Gasoline stations .....	902	877	855	-25	-22	-3	-3	-	-	-	-	-
448000	Clothing and clothing accessories stores ....	1,262	1,362	1,490	100	129	.8	.9	-	-	-	-	-
448100	Clothing stores .....	906	1,008	1,116	102	107	1.1	1.0	-	-	-	-	-
448200	Shoe stores .....	201	185	189	-16	4	-8	.2	-	-	-	-	-
448300	Jewelry, luggage, and leather goods stores.....	155	168	186	13	18	.8	1.0	-	-	-	-	-
451000	Sporting goods, hobby, book, and music stores .....	578	639	739	62	100	1.0	1.5	-	-	-	-	-
451100	Sporting goods, hobby, and musical instrument stores.....	373	430	503	57	72	1.4	1.6	-	-	-	-	-
451110	Sporting goods stores .....	174	209	251	35	42	1.8	1.9	-	-	-	-	-
451120-40	Hobby, toy, sewing, and musical instrument stores.....	199	222	251	22	30	1.1	1.3	-	-	-	-	-
451200	Book, periodical, and music stores.....	204	209	236	5	27	.2	1.2	-	-	-	-	-
452000	General merchandise stores .....	2,541	2,844	3,138	303	294	1.1	1.0	-	-	-	-	-
452100	Department stores.....	1,560	1,613	1,771	52	158	.3	.9	-	-	-	-	-
452900	Other general merchandise stores .....	981	1,231	1,367	250	136	2.3	1.1	-	-	-	-	-
453000	Miscellaneous store retailers .....	796	919	1,080	123	161	1.4	1.6	-	-	-	-	-
453100	Florists .....	113	107	118	-5	10	-5	.9	-	-	-	-	-
453200	Office supplies, stationery, and gift stores .	374	407	451	33	44	.9	1.0	-	-	-	-	-
453300	Used merchandise stores.....	75	112	151	38	39	4.2	3.0	-	-	-	-	-
453900	Other miscellaneous store retailers.....	235	292	360	57	68	2.2	2.1	-	-	-	-	-
454000	Nonstore retailers .....	421	425	486	4	61	.1	1.4	-	-	-	-	-
454100	Electronic shopping and mail-order houses	182	223	289	41	66	2.1	2.6	-	-	-	-	-
454200	Vending machine operators.....	71	51	51	-20	0	-3.2	.1	-	-	-	-	-

See footnotes at end of table.

Table V-1. Employment and output by industry, 1994, 2004, and projected 2014 — Continued

2002 NAICS coverage	Industry title	Employment							Output				
		Thousands of jobs			Change		Average annual rate of change		Billions of chained 2000 dollars			Average annual rate of change	
		1994	2004	2014	1994-2004	2004-2014	1994-2004	2004-2014	1994	2004	2014	1994-2004	2004-2014
454300	Direct selling establishments .....	169	151	146	-18	-5	-1.1	-.3	-	-	-	-	-
48-49	Transportation and warehousing .....	3,701	4,250	4,756	549	506	1.4	1.1	494	619	887	2.3	3.7
481000	Air transportation .....	511	515	560	4	45	.1	.8	86	130	213	4.2	5.0
481100	Scheduled air transportation .....	477	470	506	-7	35	-.2	.7	-	-	-	-	-
481200	Nonscheduled air transportation .....	34	45	54	11	10	2.8	2.0	-	-	-	-	-
482000	Rail transportation .....	235	224	215	-11	-9	-.5	-.4	40	43	60	.7	3.3
483000	Water transportation .....	52	57	59	5	1	.9	.2	28	22	27	-2.3	1.8
483100	Deep sea, coastal, and great lakes water transportation .....	33	37	37	4	0	1.1	.1	-	-	-	-	-
483200	Inland water transportation .....	20	21	21	1	1	.5	.5	-	-	-	-	-
484000	Truck transportation .....	1,206	1,351	1,480	145	129	1.1	.9	175	225	318	2.5	3.5
484100	General freight trucking .....	867	950	1,044	83	94	.9	.9	-	-	-	-	-
484200	Specialized freight trucking .....	339	401	436	61	36	1.7	.9	-	-	-	-	-
485000	Transit and ground passenger transportation .....	317	386	476	69	90	2.0	2.1	25	31	41	2.3	2.8
485100	Urban transit systems .....	29	40	54	11	14	3.2	3.0	-	-	-	-	-
485200	Interurban and rural bus transportation .....	22	21	23	-2	2	-.7	1.0	-	-	-	-	-
485300	Taxi and limousine service .....	64	67	80	3	13	.4	1.9	-	-	-	-	-
485400	School and employee bus transportation .....	130	167	193	37	26	2.5	1.5	-	-	-	-	-
485500	Charter bus industry .....	28	32	44	4	11	1.3	3.0	-	-	-	-	-
485900	Other transit and ground passenger transportation .....	43	59	82	16	24	3.3	3.4	-	-	-	-	-
486000	Pipeline transportation .....	57	39	37	-18	-2	-3.8	-.5	28	26	25	-6	-5
487000	Scenic and sightseeing transportation .....	21	27	35	6	8	2.3	2.8	2	2	4	1.8	4.8
488000	Support activities for transportation .....	405	536	600	131	64	2.8	1.1	38	45	72	1.8	4.8
488100	Support activities for air transportation .....	101	141	158	41	17	3.5	1.1	-	-	-	-	-
488300	Support activities for water transportation .....	89	93	104	3	11	.4	1.2	-	-	-	-	-
488400	Support activities for road transportation .....	45	76	85	31	9	5.5	1.1	-	-	-	-	-
488500	Freight transportation arrangement .....	130	170	190	39	20	2.7	1.1	-	-	-	-	-
492000	Couriers and messengers .....	466	561	600	94	40	1.9	.7	45	60	76	3.0	2.3
492100	Couriers .....	423	510	549	87	39	1.9	.7	-	-	-	-	-
492200	Local messengers and local delivery .....	43	51	51	8	1	1.6	.1	-	-	-	-	-
493000	Warehousing and storage .....	431	556	694	125	138	2.6	2.2	28	36	57	2.5	4.6
510000	Information .....	2,739	3,138	3,502	400	364	1.4	1.1	546	947	1,571	5.7	5.2
511000	Publishing industries (except Internet) .....	891	910	1,115	19	205	.2	2.1	158	230	435	3.8	6.6
511100	Newspaper, periodical, book, and directory publishers .....	754	671	715	-83	44	-1.2	.6	119	130	176	.9	3.1
511110	Newspaper publishers .....	431	375	373	-56	-2	-1.4	-.1	-	-	-	-	-
511120-40,90	Periodical publishers and all other book and directory publishers .....	324	296	342	-28	46	-.9	1.4	-	-	-	-	-
511200	Software publishers .....	137	239	400	102	161	5.7	5.3	42	101	281	9.2	10.8
512000	Motion picture, video, and sound recording industries .....	279	389	451	111	62	3.4	1.5	47	69	99	3.8	3.7
512100	Motion picture and video industries .....	253	368	430	115	63	3.8	1.6	-	-	-	-	-
512130	Motion picture and video exhibition .....	112	141	148	29	7	2.3	.5	-	-	-	-	-
512110, 20,90	Motion picture and video production, distribution, and all other related industries .....	141	227	282	86	56	4.8	2.2	-	-	-	-	-
512200	Sound recording industries .....	25	21	21	-4	-1	-1.7	-.3	-	-	-	-	-
515000	Broadcasting (except Internet) .....	290	327	362	37	35	1.2	1.0	50	66	94	2.8	3.6
515100	Radio and television broadcasting .....	231	241	237	10	-5	.4	-.2	-	-	-	-	-
515110	Radio broadcasting .....	113	112	110	-1	-3	-.1	-.2	-	-	-	-	-
515120	Television broadcasting .....	118	129	127	11	-2	.9	-.1	-	-	-	-	-

See footnotes at end of table.

**Table V-1. Employment and output by industry, 1994, 2004, and projected 2014 — Continued**

2002 NAICS coverage	Industry title	Employment							Output				
		Thousands of jobs			Change		Average annual rate of change		Billions of chained 2000 dollars			Average annual rate of change	
		1994	2004	2014	1994-2004	2004-2014	1994-2004	2004-2014	1994	2004	2014	1994-2004	2004-2014
515200	Cable and other subscription programming	59	86	125	26	39	3.7	3.9	-	-	-	-	-
517000	Telecommunications .....	961	1,043	975	81	-68	.8	-.7	257	464	667	6.1	3.7
517100	Wired telecommunications carriers .....	622	548	380	-74	-168	-1.3	-3.6	-	-	-	-	-
517200	Wireless telecommunications carriers (except satellite) .....	72	189	247	117	58	10.2	2.7	-	-	-	-	-
517300	Telecommunications resellers .....	172	150	143	-22	-7	-1.4	-.5	-	-	-	-	-
517500	Cable and other program distribution .....	80	130	166	49	37	4.9	2.5	-	-	-	-	-
516,8,9	Internet and other information services .....	318	470	600	153	130	4.0	2.5	32	120	272	14.1	8.5
516000	Internet publishing and broadcasting .....	17	31	45	14	14	6.4	3.7	-	-	-	-	-
518000	Internet service providers, Web search portals, and data processing services .....	268	388	496	120	108	3.8	2.5	-	-	-	-	-
518100	Internet service providers and Web search portals .....	41	118	136	76	18	11.1	1.5	-	-	-	-	-
518200	Data processing, hosting, and related services .....	227	271	360	44	90	1.8	2.9	-	-	-	-	-
519000	Other information services .....	33	51	59	18	8	4.5	1.5	-	-	-	-	-
520000	Finance and insurance .....	5,135	5,966	6,462	831	496	1.5	.8	839	1,459	2,110	5.7	3.8
521-2	Monetary authorities, credit intermediation, and related activities .....	2,399	2,854	3,005	455	151	1.8	.5	387	656	944	5.4	3.7
521000	Monetary authorities - central bank .....	23	22	20	-2	-2	-.8	-.9	-	-	-	-	-
522000	Credit intermediation and related activities	2,376	2,832	2,986	457	153	1.8	.5	-	-	-	-	-
522100	Depository credit intermediation .....	1,737	1,761	1,732	25	-29	.1	-.2	-	-	-	-	-
522200	Nondepository credit intermediation .....	482	768	877	287	109	4.8	1.3	-	-	-	-	-
522290	Other nondepository credit intermediation, including real estate credit and consumer lending .....	296	535	612	239	77	6.1	1.3	-	-	-	-	-
522210-20	Credit card issuing and sales financing .	186	233	266	47	33	2.3	1.3	-	-	-	-	-
522300	Activities related to credit intermediation .	157	303	377	146	74	6.8	2.2	-	-	-	-	-
523000	Securities, commodity contracts, and other financial investments and related activities .....	553	767	888	213	121	3.3	1.5	79	296	565	14.1	6.7
523900	Other financial investment activities .....	147	273	335	126	62	6.4	2.1	-	-	-	-	-
524000	Insurance carriers and related activities .....	2,119	2,260	2,476	142	215	.6	.9	-	-	-	-	-
524100	Insurance carriers .....	1,419	1,403	1,452	-15	49	-.1	.3	300	322	391	.7	2.0
524120	Direct insurance (except life, health, and medical) carriers .....	569	608	629	39	21	.7	.3	-	-	-	-	-
524110, 30	Direct life, health, and medical insurance carriers and reinsurance carriers ..	850	796	823	-54	28	-.7	.3	-	-	-	-	-
524200	Agencies, brokerages, and other insurance related activities .....	700	857	1,024	157	167	2.0	1.8	70	114	143	5.0	2.3
524210	Insurance agencies and brokerages .....	528	645	764	117	119	2.0	1.7	-	-	-	-	-
524290	Other insurance related activities .....	173	212	260	39	48	2.1	2.1	-	-	-	-	-
525000	Funds, trusts, and other financial vehicles ..	64	85	93	21	8	2.8	.9	57	71	88	2.2	2.2
525100	Insurance and employee benefit funds .....	36	46	51	10	5	2.6	.9	-	-	-	-	-
525900	Other investment pools and funds .....	28	39	42	10	4	3.2	.9	-	-	-	-	-
530000	Real estate and rental and leasing .....	1,732	2,086	2,440	354	353	1.9	1.6	761	1,020	1,442	3.0	3.5
531000	Real estate .....	1,183	1,417	1,675	234	258	1.8	1.7	641	807	1,026	2.3	2.4
531100	Lessors of real estate .....	580	601	690	21	89	.4	1.4	-	-	-	-	-
531200	Offices of real estate agents and brokers ..	241	332	345	91	13	3.3	.4	-	-	-	-	-
531300	Activities related to real estate .....	363	485	640	122	156	2.9	2.8	-	-	-	-	-

See footnotes at end of table.

**Table V-1. Employment and output by industry, 1994, 2004, and projected 2014 — Continued**

2002 NAICS coverage	Industry title	Employment							Output					
		Thousands of jobs			Change		Average annual rate of change		Billions of chained 2000 dollars			Average annual rate of change		
		1994	2004	2014	1994-2004	2004-2014	1994-2004	2004-2014	1994	2004	2014	1994-2004	2004-2014	
532000	Rental and leasing services .....	530	644	737	114	93	2.0	1.4	-	-	-	-	-	
532100	Automotive equipment rental and leasing .....	163	198	230	35	32	2.0	1.5	19	30	47	4.6	4.6	
5322-3	Consumer goods rental and general rental centers.....	287	341	378	54	37	1.7	1.0	18	24	32	2.9	2.6	
532200	Consumer goods rental .....	238	281	311	43	30	1.7	1.0	-	-	-	-	-	
532300	General rental centers.....	49	60	67	11	7	2.0	1.1	-	-	-	-	-	
532400	Commercial and industrial machinery and equipment rental and leasing .....	80	105	129	25	24	2.8	2.1	30	36	50	1.9	3.5	
533000	Lessors of nonfinancial intangible assets (except copyrighted works) .....	18	25	28	7	3	3.3	.9	55	123	292	8.3	9.0	
540000	Professional, scientific, and technical services.....	4,844	6,762	8,684	1,918	1,922	3.4	2.5	679	1,060	1,698	4.6	4.8	
541100	Legal services .....	966	1,162	1,340	196	178	1.9	1.4	169	189	236	1.1	2.2	
541200	Accounting, tax preparation, bookkeeping, and payroll services.....	670	816	1,100	146	284	2.0	3.0	72	90	127	2.3	3.5	
541300	Architectural, engineering, and related services .....	952	1,261	1,460	309	199	2.8	1.5	124	180	248	3.8	3.3	
541310-20	Architectural and landscape architectural services .....	149	229	270	81	41	4.4	1.7	-	-	-	-	-	
541330-70	Engineering, surveying, mapping, building inspection, and drafting services .....	687	887	1,020	200	132	2.6	1.4	-	-	-	-	-	
541380	Testing laboratories .....	116	144	170	28	26	2.2	1.7	-	-	-	-	-	
541400	Specialized design services .....	89	121	155	32	34	3.1	2.5	16	23	33	3.6	3.8	
541500	Computer systems design and related services .....	531	1,147	1,600	616	453	8.0	3.4	76	155	305	7.4	7.0	
541600	Management, scientific, and technical consulting services.....	417	779	1,250	362	471	6.5	4.8	71	149	272	7.6	6.2	
541700	Scientific research and development services .....	476	548	613	72	65	1.4	1.1	52	121	240	8.7	7.1	
541710	Research and development in the physical, engineering, and life sciences .....	420	483	545	64	62	1.4	1.2	-	-	-	-	-	
541720	Research and development in the social sciences and humanities.....	56	64	68	8	4	1.3	.6	-	-	-	-	-	
541800	Advertising and related services.....	375	425	520	50	95	1.3	2.0	47	69	114	4.0	5.0	
541900	Other professional, scientific, and technical services .....	368	503	646	136	143	3.2	2.5	55	87	134	4.6	4.4	
541920	Photographic services.....	88	81	88	-7	7	-8	.8	-	-	-	-	-	
541940	Veterinary services .....	157	260	333	104	73	5.2	2.5	-	-	-	-	-	
541910, 30,90	Marketing research, public opinion polling, and all other professional, scientific, and tech.....	123	162	225	39	63	2.8	3.4	-	-	-	-	-	
550000	Management of companies and enterprises .....	1,666	1,718	1,900	52	182	.3	1.0	218	397	681	6.2	5.5	
560000	Administrative and support and waste management and remediation services .....	5,664	7,934	10,396	2,270	2,462	3.4	2.7	298	496	762	5.2	4.4	
561000	Administrative and support services.....	5,404	7,609	9,983	2,205	2,374	3.5	2.8	255	439	686	5.6	4.6	
561100	Office administrative services.....	208	319	450	111	131	4.4	3.5	25	66	130	10.1	7.0	
561200	Facilities support services .....	72	116	170	43	54	4.8	3.9	7	11	15	4.5	3.4	
561300	Employment services .....	2,227	3,470	5,050	1,244	1,580	4.5	3.8	61	113	176	6.4	4.5	
561400	Business support services.....	574	754	830	180	76	2.8	1.0	36	60	107	5.3	5.9	
561420	Telephone call centers.....	301	361	353	60	-8	1.8	-2	-	-	-	-	-	
561410, 30-90	Collection agencies and all other business support services.....	273	393	477	120	84	3.7	1.9	-	-	-	-	-	
561500	Travel arrangement and reservation services .....	271	226	233	-46	7	-1.8	.3	23	28	38	1.8	3.0	
561510	Travel agencies .....	156	112	103	-44	-9	-3.3	-8	-	-	-	-	-	
561520-90	Tour operators and all other travel arrangement and reservation services .....	115	114	130	-2	16	-1	1.4	-	-	-	-	-	
561600	Investigation and security services.....	562	730	900	168	170	2.7	2.1	20	25	28	2.2	1.4	
561610	Investigation, guard, and armored car services .....	504	625	771	121	146	2.2	2.1	-	-	-	-	-	

See footnotes at end of table.

**Table V-1. Employment and output by industry, 1994, 2004, and projected 2014 — Continued**

2002 NAICS coverage	Industry title	Employment							Output					
		Thousands of jobs			Change		Average annual rate of change		Billions of chained 2000 dollars			Average annual rate of change		
		1994	2004	2014	1994-2004	2004-2014	1994-2004	2004-2014	1994	2004	2014	1994-2004	2004-2014	
561620	Security systems services .....	59	106	129	47	23	6.1	2.0	-	-	-	-	-	
561700	Services to buildings and dwellings.....	1,267	1,694	2,050	427	356	2.9	1.9	58	107	164	6.3	4.4	
561710	Exterminating and pest control services..	76	94	111	18	16	2.2	1.6	-	-	-	-	-	
561730	Landscaping services.....	339	601	751	263	150	5.9	2.3	-	-	-	-	-	
561720, 40-90	Janitorial and all other services to buildings and dwellings .....	853	999	1,188	146	189	1.6	1.7	-	-	-	-	-	
561900	Other support services .....	221	299	300	77	1	3.0	0.0	26	31	29	1.8	-5	
562000	Waste management and remediation services .....	261	325	413	65	88	2.2	2.4	43	56	75	2.7	2.9	
562100	Waste collection .....	88	119	145	31	26	3.1	2.0	22	29	38	2.7	2.9	
562200-900	Waste treatment and disposal and waste management services .....	173	206	268	33	62	1.8	2.6	21	28	37	2.7	2.9	
562200	Waste treatment and disposal .....	97	106	138	9	32	.9	2.7	-	-	-	-	-	
562900	Remediation and other waste management services .....	76	100	130	24	30	2.8	2.6	-	-	-	-	-	
610000	Educational services, private.....	1,895	2,766	3,665	872	898	3.9	2.9	115	145	188	2.3	2.7	
611100	Elementary and secondary schools, private.....	544	829	1,050	285	221	4.3	2.4	25	27	37	.8	3.4	
611200-300	Junior colleges, colleges, universities, and professional schools, private .....	1,074	1,462	1,965	388	503	3.1	3.0	67	85	108	2.3	2.5	
611200	Junior colleges, private.....	57	84	115	28	31	4.0	3.2	-	-	-	-	-	
611300	Colleges, universities, and professional schools, private .....	1,017	1,378	1,850	360	472	3.1	3.0	-	-	-	-	-	
611400-700	Other educational services, private .....	277	475	650	199	175	5.6	3.2	23	33	43	4.0	2.6	
611400	Business schools and computer and management training, private.....	59	80	95	21	15	3.0	1.8	-	-	-	-	-	
611500	Technical and trade schools, private .....	68	99	125	31	26	3.8	2.3	-	-	-	-	-	
611600	Other schools and instruction, private .....	126	230	310	103	80	6.2	3.1	-	-	-	-	-	
611700	Educational support services, private.....	23	67	120	44	53	11.1	6.0	-	-	-	-	-	
620000	Health care and social assistance .....	10,912	14,187	18,482	3,275	4,295	2.7	2.7	829	1,147	1,639	3.3	3.6	
621000-3000	Health care .....	9,530	12,055	15,610	2,525	3,555	2.4	2.6	751	1,050	1,510	3.4	3.7	
621000	Ambulatory health care services .....	3,579	4,946	7,031	1,367	2,085	3.3	3.6	376	550	822	3.9	4.1	
621100-300	Offices of health practitioners.....	2,430	3,337	4,561	907	1,224	3.2	3.2	273	400	600	3.9	4.1	
621100	Offices of physicians .....	1,481	2,054	2,813	573	760	3.3	3.2	-	-	-	-	-	
621200	Offices of dentists .....	574	760	1,000	186	241	2.8	2.8	-	-	-	-	-	
621300	Offices of other health practitioners.....	376	524	747	148	224	3.4	3.6	-	-	-	-	-	
621310	Offices of chiropractors .....	80	112	160	32	48	3.4	3.6	-	-	-	-	-	
621320	Offices of optometrists.....	74	94	130	20	36	2.5	3.3	-	-	-	-	-	
621330	Offices of mental health practitioners (except physicians).....	44	51	65	7	14	1.5	2.4	-	-	-	-	-	
621340	Offices of physical, occupational and speech therapists, and audiologists .....	129	195	285	66	91	4.2	3.9	-	-	-	-	-	
621390	Offices of all other health practitioners	49	72	107	22	35	3.8	4.1	-	-	-	-	-	
621600	Home health care services .....	553	773	1,310	220	537	3.4	5.4	30	42	67	3.3	4.8	
621400, 500, 900	Outpatient, laboratory, and other ambulatory care services .....	595	836	1,160	241	324	3.5	3.3	73	108	155	4.1	3.7	
621400	Outpatient care centers .....	315	446	643	132	197	3.6	3.7	-	-	-	-	-	
621420	Outpatient mental health and substance abuse centers .....	111	148	196	37	48	2.9	2.9	-	-	-	-	-	
621410, 90	Outpatient care centers, except mental health and substance abuse .....	204	298	447	95	149	3.9	4.1	-	-	-	-	-	
621500	Medical and diagnostic laboratories .....	145	189	240	43	51	2.6	2.4	-	-	-	-	-	
621900	Other ambulatory health care services..	135	201	277	66	76	4.0	3.3	-	-	-	-	-	
621910	Ambulance services .....	83	117	155	33	38	3.4	2.9	-	-	-	-	-	
621990	All other ambulatory health care services .....	52	85	122	32	37	4.9	3.7	-	-	-	-	-	
622000	Hospitals, private .....	3,724	4,294	4,982	570	688	1.4	1.5	285	385	544	3.1	3.5	
622100	General medical and surgical hospitals, private.....	3,505	4,051	4,699	546	648	1.5	1.5	-	-	-	-	-	

See footnotes at end of table.

**Table V-1. Employment and output by industry, 1994, 2004, and projected 2014 — Continued**

2002 NAICS coverage	Industry title	Employment							Output				
		Thousands of jobs			Change		Average annual rate of change		Billions of chained 2000 dollars			Average annual rate of change	
		1994	2004	2014	1994-2004	2004-2014	1994-2004	2004-2014	1994	2004	2014	1994-2004	2004-2014
622200	Psychiatric and substance abuse hospitals, private .....	108	92	78	-16	-14	-1.6	-1.7	-	-	-	-	-
622300	Specialty (except psychiatric and substance abuse) hospitals, private.....	112	151	205	39	54	3.0	3.1	-	-	-	-	-
623000	Nursing and residential care facilities .....	2,227	2,815	3,597	588	782	2.4	2.5	90	115	144	2.5	2.3
623100	Nursing care facilities .....	1,377	1,575	1,757	198	181	1.4	1.1	58	68	74	1.5	.9
623200-900	Residential care facilities .....	850	1,240	1,840	390	601	3.8	4.0	32	48	71	4.1	4.1
623200	Residential mental retardation, mental health and substance abuse facilities.....	339	491	727	152	236	3.8	4.0	-	-	-	-	-
623210	Residential mental retardation facilities	236	337	497	101	160	3.6	4.0	-	-	-	-	-
623220	Residential mental health and substance abuse facilities .....	103	154	231	52	77	4.2	4.1	-	-	-	-	-
623300	Community care facilities for the elderly	396	583	902	187	319	3.9	4.5	-	-	-	-	-
623900	Other residential care facilities .....	115	166	211	51	45	3.7	2.4	-	-	-	-	-
624000	Social assistance.....	1,382	2,132	2,872	751	740	4.4	3.0	79	98	130	2.2	2.9
624100-300	Individual, family, community, and vocational rehabilitation services..	872	1,365	1,810	493	445	4.6	2.9	51	59	79	1.5	3.0
624100	Individual and family services.....	498	853	1,160	355	307	5.5	3.1	-	-	-	-	-
624120	Services for the elderly and persons with disabilities .....	211	397	550	186	153	6.5	3.3	-	-	-	-	-
624110, 90	Child, youth, and all other individual and family services.....	288	456	610	169	154	4.7	2.9	-	-	-	-	-
624200	Community food and housing, and emergency and other relief services .....	86	131	160	45	29	4.3	2.0	-	-	-	-	-
624300	Vocational rehabilitation services .....	288	381	490	93	109	2.9	2.5	-	-	-	-	-
624400	Child day care services .....	510	767	1,062	257	295	4.2	3.3	28	39	51	3.3	2.8
710000	Arts, entertainment, and recreation .....	1,376	1,833	2,293	458	460	2.9	2.3	115	176	254	4.4	3.8
711000	Performing arts, spectator sports, and related industries .....	296	365	443	69	78	2.1	2.0	52	63	86	2.0	3.2
711100	Performing arts companies .....	107	115	135	8	20	.8	1.6	10	9	10	-9	1.1
711200	Spectator sports .....	96	120	150	24	30	2.3	2.3	16	22	31	3.2	3.5
711300-400	Promoters of events, and agents and managers .....	66	88	97	22	9	3.0	1.0	11	14	20	2.3	3.6
711500	Independent artists, writers, and performers.....	28	42	61	14	19	4.2	3.8	15	19	26	2.0	3.4
712000	Museums, historical sites, and similar institutions .....	82	117	140	35	23	3.7	1.8	5	7	10	4.9	3.1
713000	Amusement, gambling, and recreation industries.....	998	1,351	1,710	354	358	3.1	2.4	59	105	158	6.0	4.1
713100	Amusement parks and arcades.....	129	154	208	25	54	1.8	3.0	-	-	-	-	-
713200	Gambling industries.....	89	137	189	48	52	4.4	3.2	-	-	-	-	-
713900	Other amusement and recreation industries.....	780	1,060	1,313	280	253	3.1	2.2	-	-	-	-	-
713940	Fitness and recreational sports centers ..	319	485	614	167	129	4.3	2.4	-	-	-	-	-
713910-30, 50-90	Golf courses, country clubs, and all other amusement and recreation industries.....	462	575	699	113	124	2.2	2.0	-	-	-	-	-
720000	Accommodation and food services.....	8,724	10,646	12,401	1,922	1,755	2.0	1.5	410	510	627	2.2	2.1
721000	Accommodation, including hotels and motels.....	1,615	1,796	2,100	181	304	1.1	1.6	106	123	162	1.5	2.8
721100, 721300	Traveler accommodation, including hotels and motels.....	1,581	1,745	2,039	163	294	1.0	1.6	-	-	-	-	-
721120	Casino hotels.....	233	275	325	43	50	1.7	1.7	-	-	-	-	-
721110, 721190, 721300	Hotels (except casino), motels, and all other traveler accommodation.....	1,341	1,469	1,714	128	244	.9	1.6	-	-	-	-	-
721200	RV (recreational vehicle) parks and recreational camps.....	34	51	62	17	10	4.1	1.8	-	-	-	-	-

See footnotes at end of table.

**Table V-1. Employment and output by industry, 1994, 2004, and projected 2014 — Continued**

2002 NAICS coverage	Industry title	Employment							Output					
		Thousands of jobs			Change		Average annual rate of change		Billions of chained 2000 dollars			Average annual rate of change		
		1994	2004	2014	1994-2004	2004-2014	1994-2004	2004-2014	1994	2004	2014	1994-2004	2004-2014	
722000	Food services and drinking places .....	7,109	8,850	10,301	1,741	1,451	2.2	1.5	304	387	465	2.4	1.9	
722100	Full-service restaurants .....	3,337	4,226	4,928	889	701	2.4	1.5	-	-	-	-	-	
722200	Limited-service eating places .....	3,006	3,727	4,319	721	592	2.2	1.5	-	-	-	-	-	
722300	Special food services .....	426	524	647	98	123	2.1	2.1	-	-	-	-	-	
722400	Drinking places (alcoholic beverages).....	340	373	408	33	35	.9	.9	-	-	-	-	-	
810000	Other services (except government) .....	5,202	6,210	6,944	1,008	734	1.8	1.1	345	430	565	2.2	2.8	
811000	Repair and maintenance .....	1,023	1,228	1,408	204	181	1.8	1.4	132	168	212	2.5	2.4	
811100	Automotive repair and maintenance.....	701	891	1,068	190	177	2.4	1.8	81	103	128	2.4	2.2	
811110	Automotive mechanical and electrical repair and maintenance.....	335	402	457	68	55	1.9	1.3	-	-	-	-	-	
811120	Automotive body, paint, interior, and glass repair .....	204	261	312	57	51	2.5	1.8	-	-	-	-	-	
811190	Other automotive repair and maintenance	163	229	299	65	70	3.4	2.7	-	-	-	-	-	
811200	Electronic and precision equipment repair and maintenance.....	98	99	90	1	-9	.1	-1.0	17	18	18	.3	.1	
811300	Commercial and industrial machinery and equipment (except automotive and electronic) repair.....	144	158	170	14	12	.9	.8	16	28	44	5.8	4.6	
811400	Personal and household goods repair and maintenance.....	80	80	80	0	1	0.0	.1	17	19	23	1.1	1.7	
812000	Personal and laundry services .....	1,120	1,274	1,475	154	201	1.3	1.5	89	113	165	2.5	3.9	
812100	Personal care services .....	439	561	670	122	109	2.5	1.8	27	37	56	3.4	4.2	
812200	Death care services.....	120	138	157	18	19	1.4	1.3	12	13	13	.7	.5	
812300	Drycleaning and laundry services .....	368	352	380	-16	28	-4	.8	19	20	28	.5	3.3	
812900	Other personal services .....	193	223	268	30	45	1.5	1.8	31	43	68	3.4	4.7	
813000	Religious, grantmaking, civic, professional, and similar organizations.....	2,285	2,929	3,310	645	381	2.5	1.2	112	134	172	1.8	2.5	
813100	Religious organizations .....	1,234	1,698	1,900	464	203	3.2	1.1	44	51	67	1.3	2.9	
813200-300	Grantmaking services and social advocacy organizations .....	261	304	360	44	56	1.6	1.7	15	24	38	5.0	4.9	
813200	Grantmaking and giving services .....	120	127	150	6	23	.5	1.7	-	-	-	-	-	
813300	Social advocacy organizations .....	140	178	210	37	32	2.4	1.7	-	-	-	-	-	
813400-900	Civic, social, professional, and similar organizations .....	790	927	1,050	137	123	1.6	1.3	53	60	66	1.2	1.0	
813400	Civic and social organizations .....	377	410	458	33	48	.9	1.1	-	-	-	-	-	
813900	Business, professional, labor, political, and similar organizations.....	413	517	592	104	75	2.3	1.4	-	-	-	-	-	
813930	Labor unions and similar labor organizations .....	141	138	135	-3	-3	-2	-2	-	-	-	-	-	
813910-20, 40-90	Business associations and all other professional and similar organizations .....	273	379	457	107	78	3.4	1.9	-	-	-	-	-	
814000	Private households .....	774	779	750	5	-29	.1	-4	13	15	15	1.8	.1	
N.A.	Federal Government .....	3,018	2,728	2,771	-291	43	-1.0	.2	601	706	737	1.6	.4	
491100	Postal Service .....	821	784	778	-37	-6	-5	-1	56	59	65	.6	.9	
N.A.	Federal electric utilities .....	27	23	23	-4	-1	-1.6	-2	8	9	12	1.0	2.5	
N.A.	Federal enterprises except the Postal Service and electric utilities .....	124	71	53	-54	-18	-5.5	-2.8	9	8	10	-1.1	2.4	
N.A.	Federal Government except enterprises .....	2,046	1,850	1,917	-197	68	-1.0	.4	448	544	560	2.0	.3	
N.A.	Federal Government capital services.....	-	-	-	-	-	-	-	81	85	90	.4	.6	
N.A.	State and local government.....	16,257	18,891	21,019	2,634	2,128	1.5	1.1	1,113	1,402	1,799	2.3	2.5	
N.A.	Local government passenger transit .....	204	248	300	44	52	1.9	1.9	8	7	10	-5	3.3	
N.A.	Local government enterprises except passenger transit.....	3,652	4,216	4,699	564	483	1.4	1.1	111	142	176	2.5	2.2	
N.A.	Local government hospitals.....	673	657	690	-16	33	-2	.5	52	58	74	.9	2.5	
N.A.	Local government educational services .....	6,329	7,763	8,546	1,433	783	2.1	1.0	303	390	494	2.6	2.4	
N.A.	Local government excluding enterprises, educational services, and hospitals .....	823	1,022	1,250	199	228	2.2	2.0	288	361	471	2.3	2.7	
N.A.	State government enterprises .....	1,783	1,853	1,947	70	94	.4	.5	16	20	25	2.3	2.1	

See footnotes at end of table.

**Table V-1. Employment and output by industry, 1994, 2004, and projected 2014 — Continued**

2002 NAICS coverage	Industry title	Employment							Output				
		Thousands of jobs			Change		Average annual rate of change		Billions of chained 2000 dollars			Average annual rate of change	
		1994	2004	2014	1994-2004	2004-2014	1994-2004	2004-2014	1994	2004	2014	1994-2004	2004-2014
N.A.	State government hospitals.....	407	350	326	-57	-24	-1.5	-.7	40	42	54	.6	2.5
N.A.	State government educational services .....	1,882	2,249	2,691	367	442	1.8	1.8	111	147	186	2.8	2.4
N.A.	State government excluding enterprises, educational services, and hospitals .....	503	533	571	30	37	.6	.7	119	136	179	1.3	2.7
N.A.	State and local government capital services	-	-	-	-	-	-	-	66	99	131	4.2	2.8
N.A.	Owner-occupied dwellings .....	-	-	-	-	-	-	-	657	858	1,124	2.7	2.7
110000	Agriculture, forestry, fishing, and hunting <sup>2</sup> .....	2,890	2,140	1,910	-750	-230	-3.0	-1.1	232	275	322	1.7	1.6
111000	Crop production .....	1,226	857	712	-369	-145	-3.5	-1.8	87	112	144	2.5	2.6
112000	Animal production.....	1,331	953	877	-379	-75	-3.3	-.8	94	114	126	2.0	1.0
113100-3200	Forestry.....	22	24	20	2	-5	.9	-2.1	6	5	5	-.6	0.0
113300	Logging	119	100	91	-18	-9	-1.7	-1.0	28	26	28	-.8	.7
114000	Fishing, hunting and trapping .....	75	52	42	-23	-10	-3.6	-2.0	7	6	7	-1.4	.6
115000	Support activities for agriculture and forestry	117	154	168	37	14	2.7	.9	11	11	12	.2	1.1
N.A.	Nonagriculture self-employed and unpaid family workers <sup>3</sup> .....	9,360	9,556	10,012	196	456	.2	.5	-	-	-	-	-
N.A.	Secondary wage and salary jobs in agriculture and private household industries <sup>4</sup>	182	138	127	-44	-11	-2.8	-.8	-	-	-	-	-
N.A.	Secondary jobs as a self-employed or unpaid family worker <sup>5</sup> .....	1,830	1,587	1,614	-243	28	-1.4	.2	-	-	-	-	-
	<b>Total<sup>6,7</sup>.....</b>	<b>129,246</b>	<b>145,612</b>	<b>164,540</b>	<b>16,366</b>	<b>18,927</b>	<b>1.2</b>	<b>1.2</b>	<b>14,088</b>	<b>19,278</b>	<b>27,418</b>	<b>3.2</b>	<b>3.6</b>

<sup>1</sup> Includes wage and salary data from the Current Employment Statistics survey, except private households, which is from the Current Population Survey. Logging workers are excluded.

<sup>2</sup> Includes agriculture, forestry, fishing, and hunting wage and salary, self-employed, and unpaid family workers data from the Current Population Survey, except logging, which is from Current Employment Statistics survey. Government wage and salary workers are excluded.

<sup>3</sup> Comparable estimate of output growth is not available.

<sup>4</sup> Workers who hold a secondary wage and salary job in agricultural production, forestry, fishing, and private household industries.

<sup>5</sup> Wage and salary workers who hold a secondary job as a self-em-

ployed or unpaid family worker.

<sup>6</sup> Employment data for wage and salary workers are from the BLS Current Employment Statistics survey, which counts jobs, whereas self-employed, unpaid family workers, and agriculture, forestry, fishing, and hunting are from the Current Population Survey (household survey), which counts workers.

<sup>7</sup> Output subcategories do not necessarily add to higher categories as a by product of chain-weighting.

Notes: Dash indicates data not available. Due to rounding, detailed employment and output may not add to totals.

**Table V–2. Factors affecting industry output and employment, 2004–14**

2002 NAICS code	Industry Title	Factors affecting output and employment
111	Crop production	Output is expected to grow more slowly than GDP. Employment is projected to fall as a result of increasing productivity, global competition, increasing consolidation of farms, and a decline in the number of self-employed farmers and unpaid family workers.
112	Animal production	Output is expected to grow more slowly than GDP. Employment is projected to continue to decline, although more slowly than in the preceding decade, because of the continued consolidation of ranches. The reopening of global markets for U.S. beef is expected to help offset some of the employment effects of continued productivity growth.
1131, 1132	Forestry	Output is purchased by the logging industry. Global competition is expected to have little or no effect on growth in U.S. production. Employment is projected to fall slightly because of landowners' conversion of more and more land to recreational and other purposes.
1133	Logging	Output is used in industries that produce pulp, paper, veneer, and plywood. Output is expected to grow slowly. Employment is projected to decline because of increases in productivity and slow growth in this industry.
114	Fishing, hunting and trapping	Output is used in food production and is consumed by individuals. Because of imports, an increase in fish farming, and declines in the level of fish stocks in U.S. waters, output is projected to grow slowly and employment is projected to decrease.
115	Support activities for agriculture and forestry	Output is used in the agricultural and livestock industries and is projected to grow more slowly than GDP. Overall, employment is expected to grow slowly as farms and ranches get larger and increasingly hire out specialized workers from this industry to perform tasks previously done by self-employed farmers.
211	Oil and gas extraction	Output is used in petroleum refining and by gas utilities industries. Although this industry saw its output decrease during the 1994–2004 period, the industry is projected to grow at a relatively slow rate over the next 10 years. This turnaround is due to increased demand worldwide. Employment is projected to fall because of improved extraction techniques and other productivity gains.
2121	Coal mining	Output is used in the production of electricity and primary steel products. Demand is expected to increase on the world market. Improvements in productivity and an increase in mining in western States where coal is easier to access are expected to contribute to declining employment.
2122	Metal ore mining	Output is expected to fall because of the increasing difficulty of extracting ore within the United States. Output is used in a large variety of manufactured goods. Employment also is expected to fall as the U.S. industry contracts and some productivity gains are realized. This industry is projected to be one of the 10 most rapidly declining industries, in terms of wage and salary employment, over the 2004–14 projection period.
2123	Nonmetallic mineral mining and quarrying	Output is used in new residential and maintenance construction and concrete products industries. This industry is expected to increase output slowly. Small improvements in productivity are expected to contribute to a slight decrease in employment.
213	Support activities for mining	Output is used primarily by the oil and gas extraction industry, but also is found in all mining operations. Production is expected to fall slightly. Employment is projected to remain flat as productivity declines slightly.
2211	Electric power generation, transmission and distribution	Output is consumed by individuals and is used as an input in virtually all industries. Output in this industry is expected to grow more slowly than GDP. The demand for electronic appliances is expected to grow, but will be offset by gains in energy efficiency in these appliances. Employment is projected to fall slightly as a result of continued productivity growth.

**Table V-2. Factors affecting industry output and employment, 2004-14 — Continued**

2002 NAICS code	Industry Title	Factors affecting output and employment
2212	Natural gas distribution	The output from this industry is consumed by individuals and by industries, including gas and combined utility services. Output is expected to fall, because of decreased productivity. Employment is projected to fall slightly, though not as fast as output.
2213	Water, sewage and other systems	Output is consumed by individuals and is used as an input in other industries. This industry is expected to increase its output as the population grows in rural areas. Employment is expected to grow slightly faster than that of the overall economy, primarily because of the industry's relatively slow productivity growth.
23	Construction	Output is expected to grow as a result of continued government expenditures on infrastructure and an aging housing stock, both of which will require repair and refurbishment. Output, however, is expected to grow more slowly than GDP and more slowly than in the recent past because of a decline in residential building from historic highs. Employment is projected to continue to grow because productivity is expected to grow relatively slowly.
3111	Animal food manufacturing	Output is used in the production of pet food and agriculture. Output is expected to increase because of an increasing number of households with pets. Employment is expected to decrease slightly because of continuing advances in productivity. This industry will continue to incorporate improved technology and automation of food processing plants and techniques.
3112	Grain and oilseed milling	Output is used in the livestock industry, is consumed by individuals, and is exported. Output is expected to grow as productivity increases. Employment is projected to fall slightly, also as a result of productivity growth.
3113	Sugar and confectionery product manufacturing	Output is used by other food industries and is consumed by individuals. Output is expected to grow more slowly than GDP. Productivity is expected to increase, so employment is projected to decline slightly.
3114	Fruit and vegetable preserving and specialty food manufacturing	Output is used in food services establishments and is consumed by individuals. Output is expected to grow at a rate slower than GDP. Employment is projected to show a slight decline as a result of productivity growth.
3115	Dairy product manufacturing	Output is consumed by individuals and is used by food services establishments. Output is expected to increase more slowly than GDP. Improved technology and productivity growth are expected to contribute to a slight decline in employment.
3116	Animal slaughtering and processing	Output is used by food services establishments and is consumed by individuals. Output is expected to grow at a rate slower than GDP. Because this industry is relatively labor intensive, productivity growth rates are expected to be small; employment is therefore projected to continue to grow at a rate comparable to the rate for the overall economy.
3117	Seafood product preparation and packaging	Output is consumed by individuals and is used by food services establishments. Output is expected to rise more slowly than GDP. Employment is expected to fall slightly as a result of improvements in productivity.
3118	Bakeries and tortilla manufacturing	Output is consumed by individuals and is used by food services establishments. Output is expected to grow at a rate slower than GDP. Productivity is expected to grow at roughly the same rate as industry output; consequently, employment is projected to grow only slightly.
3119	Other food manufacturing	This industry group includes snack food manufacturing, coffee and tea manufacturing, seasoning and dressing, and other miscellaneous food manufacturing. Output is consumed by individuals and is used in food services establishments. Population growth, rising incomes, and successful marketing will affect the industry; output is expected to grow at a rate slower than GDP. Employment is projected to grow slightly as modest productivity growth occurs.

**Table V–2. Factors affecting industry output and employment, 2004–14 — Continued**

<i>2002 NAICS code</i>	<i>Industry Title</i>	<i>Factors affecting output and employment</i>
3121	Beverage manufacturing	Output is consumed by individuals and by food services establishments. Output is projected to grow more slowly than GDP and employment is projected to remain flat because of increases in productivity. Automation of packaging and filling will continue to affect productivity in this industry.
3122	Tobacco manufacturing	Output is consumed by individuals, is used by other firms in the tobacco industry, and is exported. Output is expected to continue to fall, even faster than it did in the preceding decade. Employment also is projected to fall, because of small gains in productivity. This industry is projected to be one of the 10 most rapidly declining industries, in terms of wage and salary employment, over the 2004–14 projection period.
3131	Fiber, yarn, and thread mills	Output is used in the apparel, textile, and furniture industries. Output is projected to decline, mostly because of increasing imports. With its low labor costs and efficient production techniques, China is expected to dominate much of the market. Employment in this industry is projected to fall not only as a result of declining U.S. production, but also because of increasing productivity. The industry is projected to be one of the 10 most rapidly declining industries, in terms of wage and salary employment, over the 2004–14 projection period.
3132	Fabric mills	Output is used in the apparel, textile, and furniture industries. Imports are expected to continue to grow, causing domestic production to fall. Productivity growth is expected to continue, albeit at a slower rate than during the previous decade because an increased proportion of design and management functions within the industry will slow productivity growth. Combined with consolidation among the textile producers, the improvements in productivity are projected to result in declining employment. This industry is projected to be one of the 10 most rapidly declining industries, in terms of wage and salary employment, over the 2004–14 projection period.
3133	Textile and fabric finishing and fabric coating mills	Output is used in the apparel, textile, and furniture industries. Domestic production is expected to fall in this industry as a result of increasing imports. Employment is projected to fall even faster because of declining output and continuing productivity growth. The industry is projected to be one of the 10 most rapidly declining industries, in terms of wage and salary employment, over the 2004–14 projection period.
3141	Textile furnishings mills	Output is consumed by individuals and by other industries. Output is expected to grow at the same rate as GDP. Because productivity is expected to grow faster than output, employment is projected to fall.
3149	Other textile product mills	Output is consumed by individuals and is used in other industries. Because imports are expected to have less of an effect on this industry, output is projected to grow slowly. Productivity growth, however, is expected to contribute to declining employment.
3151	Apparel knitting mills	Output is consumed by individuals and is used in the cut-and-sew apparel industries. The reduction in import quotas on China is expected to cause output to continue to fall. In addition, productivity growth is projected to further the decline of employment in this industry. The industry is projected to be one of the 10 most rapidly declining industries, in terms of wage and salary employment, over the 2004–14 projection period.
3152	Cut and sew apparel manufacturing	Output is consumed by individuals. Output is expected to fall as a result of increasing imports, primarily from China. Decreased domestic production and increased productivity levels are projected to lead to a significant decline in employment. This industry is projected to be one of the 10 most rapidly declining industries, in terms of wage and salary employment, over the 2004–14 projection period.

**Table V-2. Factors affecting industry output and employment, 2004-14 — Continued**

2002 NAICS code	Industry Title	Factors affecting output and employment
3159	Apparel accessories and other apparel manufacturing	Output is consumed by individuals. Output is expected to continue to fall, but at a slower rate than during the preceding decade. Productivity is expected to continue to grow, causing a further decline in employment. This industry is projected to be one of the 10 most rapidly declining industries, in terms of wage and salary employment, over the 2004-14 projection period.
3161	Leather and hide tanning and finishing	Output is used in other leather industries and in the motor vehicle parts manufacturing industry. Output is projected to fall because of an increasing share of imports. Continued productivity improvements are expected to contribute to declining employment.
3162	Footwear manufacturing	Output is consumed mostly by individuals and is expected to fall. Imports will satisfy most of the demand for this product. Employment is projected to fall as a result of declining production and increasing productivity. This industry is projected to be one of the 10 most rapidly declining industries, in terms of wage and salary employment, over the 2004-14 projection period.
3169	Other leather and allied product manufacturing	Output is consumed mainly by individuals and is expected to grow more slowly than GDP. Productivity growth is projected to contribute to a decline in employment.
3211	Sawmills and wood preservation	Output is used in the construction industry (primarily for new single-unit housing) and by individuals. Output is expected to grow at a rate slower than GDP. Productivity is projected to continue to grow, causing a slight decline in employment.
3212	Veneer, plywood, and engineered wood product manufacturing	Output is used as an input in residential construction and is projected to grow more slowly than GDP. Productivity is projected to grow faster than in the preceding decade, but still slower than output. The overall result is expected to be marginal growth in employment.
3219	Other wood product manufacturing	Output is used in the construction industry and is expected to grow slower than GDP. Little productivity growth is expected in this industry, resulting in some growth in employment.
3221	Pulp, paper, and paperboard mills	Output is used as an input to paper and printing industries and is projected to show little growth. Employment is projected to fall because of continued, but relatively slower, growth in productivity. Consolidation and an increased level of computerization are expected to contribute heavily to the projected trends for output, productivity, and employment.
3222	Converted paper product manufacturing	Output is used by individuals and as an input to other industries, especially wholesale and retail trade. Output is expected to grow more slowly than GDP. Little productivity or employment growth is expected.
323	Printing and related support activities	Output is purchased by commercial printing, publishing, and advertising industries and is projected to grow at a rate slower than GDP. Productivity growth, the result of increasing computerization, is expected to combine with rising imports and the increasing use of the Internet to diminish employment overall.
324	Petroleum and coal products manufacturing	Output is consumed by individuals and as an input to the electric utilities and transportation industries. Output is expected to show little growth. Employment is projected to fall because of productivity growth.
3251	Basic chemical manufacturing	Output is used as an input in the chemical, plastics, and petroleum-refining industries. Output is expected to fall slightly as a result of increasing imports. Employment is projected to decline because of decreasing production and increasing productivity. This industry is projected to be one of the 10 most rapidly declining industries, in terms of wage and salary employment, over the 2004-14 projection period.

Table V-2. Factors affecting industry output and employment, 2004-14 — Continued

2002 NAICS code	Industry Title	Factors affecting output and employment
3252	Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing	Output is used as an input in a variety of other manufacturing industries, including plastics and textiles. Output is expected to grow more slowly than GDP. Employment is projected to continue to fall as productivity growth improves.
3253	Pesticide, fertilizer, and other agricultural chemical manufacturing	Output is used in the agricultural industries and is projected to fall slightly. Employment is projected to fall because of continued improvements in productivity.
3254	Pharmaceutical and medicine manufacturing	Output is consumed by individuals and is used in the health care industries. Output is projected to grow at a rate close to that of GDP as the aging population contributes to increased demand. Employment is projected to increase because of relatively strong demand.
3255	Paint, coating, and adhesive manufacturing	Output is used in the manufacturing and construction industries and is expected to grow at one-third the rate of GDP. Improved productivity is expected to cause a decline in employment.
3256	Soap, cleaning compound, and toilet preparation manufacturing	Output is consumed mostly by individuals. Output is projected to continue to grow at a rate slower than GDP. Employment is projected to grow more slowly than output, primarily because of productivity growth.
3259	Other chemical product and preparation manufacturing	Output is used as an input in the manufacturing and construction industries and is projected to continue to grow more slowly than GDP. Employment is projected to fall because of continued improvements in productivity.
3261	Plastics product manufacturing	Output is used as an input in many industries. Demand is expected to grow as manufacturers continue to substitute plastic products for products made out of other materials. Employment is projected to fall slightly as computer-controlled automation and other technological improvements contribute to strong productivity growth.
3262	Rubber product manufacturing	Output is used as an input in the construction, motor vehicles, and textiles industries and is projected to decline slightly. Employment is projected to fall as output falls and productivity improves.
3271	Clay product and refractory manufacturing	Output is used in the construction and manufacturing industries. Output is expected to grow because demand for these goods in the construction industry is projected to remain strong. Employment is projected to grow slowly. Productivity is expected to grow at a slower rate than the average for all industries.
3272	Glass and glass product manufacturing	Output is consumed by the beverage, prepared foods, motor vehicle, and other manufacturing industries. Output is expected to continue to grow, but more slowly than GDP. Employment is projected to fall as productivity growth remains strong.
3273	Cement and concrete product manufacturing	Output is used in the construction industry and in owner-occupied dwellings. Output is projected to increase more slowly than GDP, primarily because of the continued growth in construction. Employment is projected to continue to increase at approximately the rate of growth of the total economy.
3274	Lime and gypsum product manufacturing	Output is used in the construction industry and in owner-occupied dwellings and is projected to grow slightly more slowly than GDP. Employment is projected to increase slightly faster than the rest of the economy because of relatively slow productivity growth in the industry.

**Table V-2. Factors affecting industry output and employment, 2004-14 — Continued**

2002 NAICS code	Industry Title	Factors affecting output and employment
3279	Other nonmetallic mineral product manufacturing	Output is used in the construction and manufacturing industries. Output and employment are projected to grow slowly.
3311	Iron and steel mills and ferroalloy manufacturing	Output is used in manufacturing industries and is projected to grow more slowly than GDP. Productivity growth is projected to be strong, resulting in declining employment.
3312	Steel product manufacturing from purchased steel	Output is used in manufacturing industries. Output is projected to grow; employment is projected to fall because of improved productivity.
3313	Alumina and aluminum production and processing	Output is used in metal cans and shipping containers, fabricated structural metal products, and semiconductors and electronic components, as well as in other manufacturing industries. Output is projected to fall slightly because of increased imports. Employment also is projected to decline, as a result of decreasing output and increasing productivity.
3314	Nonferrous metal (except aluminum) production and processing	Output is used in manufacturing industries and is expected to grow slightly. Employment is projected to decline because of improved productivity.
3315	Foundries	Output is used primarily in the motor vehicle parts manufacturing industry and in other industrial sectors. Output is projected to fall because of declining intermediate sales. Employment is projected to fall as a result of decreasing output and increasing productivity.
3321	Forging and stamping	Output is used in manufacturing industries, as well as in construction, utilities, and oil and gas extraction. Output is projected to grow slowly. Productivity is projected to grow slowly as well, so that a slight decline in employment is expected.
3322	Cutlery and handtool manufacturing	Output is purchased primarily by individuals and is projected to increase more slowly than GDP. Employment is projected to decline, but at a slower rate than in the preceding decade because of a slowing in the rate of productivity growth.
3323	Architectural and structural metals manufacturing	Output is used mostly in construction. Output is projected to grow at roughly two-thirds the rate of GDP. Employment is projected to increase slightly because of relatively low growth in productivity.
3324	Boiler, tank, and shipping container manufacturing	Output is used in the construction and manufacturing industries, for light gauge metal shipping containers, among other things. Output is projected to grow slightly; demand is projected to continue to grow as the shipping of goods increases. Because productivity is projected to grow more quickly than output, employment is expected to fall.
3325	Hardware manufacturing	Output is used mostly in the construction and manufacturing industries and is projected to grow at approximately two-thirds the rate of GDP. Employment is projected to fall because productivity growth is expected to outpace output growth.
3326	Spring and wire product manufacturing	Output is used in the construction, motor vehicle manufacturing, and aircraft manufacturing industries. Output is expected to fall slightly as a result of decreasing demand. Continued productivity growth and decreasing output are projected to cause a decline in employment.
3327	Machine shops; turned product; and screw, nut, and bolt manufacturing	Output is purchased by motor vehicle manufacturers and repairers, aircraft producers, and other industrial manufacturers. Output is projected to grow at approximately the same rate as GDP. Because output is projected to grow faster than productivity, employment is expected to increase slightly.

**Table V-2. Factors affecting industry output and employment, 2004-14 — Continued**

2002 NAICS code	Industry Title	Factors affecting output and employment
3328	Coating, engraving, heat treating, and allied activities	Output is used in a variety of manufacturing industries, including electronic components, motor vehicle parts, and communications equipment. Output is projected to increase at approximately the same rate as GDP. Employment is projected to increase only slightly, because of continued productivity growth.
3329	Other fabricated metal product manufacturing	Output is used in the construction industry and is consumed by both individuals and businesses. Output is expected to grow at roughly one-third the rate of GDP. Employment is projected to decline slightly because of productivity gains.
3331	Agriculture, construction, and mining machinery manufacturing	Output is purchased as investment by construction, crude petroleum, coal mining, and other manufacturing industries. Continued demand in the construction, mining, and petroleum industries will contribute to growth. Output and productivity are projected to grow slowly and result in a small decrease in employment.
3332	Industrial machinery manufacturing	Output is used as investment in the food, printing and publishing, paper, and other manufacturing industries. Many of these industries, including paper and textiles manufacturing, are expected to face increased international competition, resulting in downward pressure on demand. Other industries, such as petroleum refining and food processing, will increase their demand. The net result is slow growth in output. Employment is projected to fall because of relatively strong productivity growth.
3333	Commercial and service industry machinery manufacturing	Output from this industry is purchased for investment and personal consumption purposes. An increasing amount of imports is expected to put pressure on the industry, resulting in a decrease in output. Employment also is projected to fall, because of the shrinking output as well as increasing productivity.
3334	Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing	Output is used in the motor vehicle manufacturing and construction industries. It also is purchased as an investment by retail trade and food services establishments. Output is projected to grow more slowly than GDP as new residential construction slows from historic peaks and as aging equipment is replaced more gradually. Improved production techniques are expected to result in higher productivity, so employment is projected to fall slightly.
3335	Metalworking machinery manufacturing	Output is purchased as investment by construction, crude petroleum, coal mining, and other manufacturing industries. This industry is susceptible to import pressures because transportation costs are low. As a result, output growth is expected to be limited. New technologies are expected to increase productivity, resulting in a decrease in employment.
3336	Engine, turbine, and power transmission equipment manufacturing	Output is used mostly as an intermediate input to other industries and is exported. Growth in domestic electricity generation and trucking fleets is expected to contribute to output growth in this industry. Because industry output is projected to grow slower than GDP and improvements in productivity are expected to continue, employment is projected to decrease.
3339	Other general purpose machinery manufacturing	Output is purchased as an investment by utilities and the chemical, construction, steel, and mining industries and is used as an intermediate input in heavy manufacturing sectors. Output is projected to grow more slowly than GDP. Productivity growth is projected to continue, so employment is expected to continue to fall.
3341	Computer and peripheral equipment manufacturing	Output is purchased as a capital investment by many industries, including retail trade, finance and insurance, and many other service industries. Output is projected to continue growing rapidly, primarily because of extremely large productivity gains, which are typical of this industry. Because of the large productivity gains, employment is projected to decrease, although not as rapidly as it did in the preceding decade.

**Table V-2. Factors affecting industry output and employment, 2004-14 — Continued**

2002 NAICS code	Industry Title	Factors affecting output and employment
3342	Communications equipment manufacturing	Output is purchased primarily as investment in the air transportation, broadcasting, and communications industries. Output also is used as an input to the aircraft missiles, space vehicles, construction, and communications industries. Output is projected to grow approximately 4 times as fast as GDP, with much of the increase due to productivity improvements. Employment is projected to fall slightly, at a rate much slower than in the preceding decade.
3343	Audio and video equipment manufacturing	Output is purchased primarily by individuals and is projected to grow very slowly. Because productivity growth is expected to continue, employment is projected to decline.
3344	Semiconductor and other electronic component manufacturing	Output is used as an input in the communications and computer equipment industries and also is exported. Output is projected to increase faster than GDP, with much of the increase due to rapidly rising exports. Productivity growth is expected to continue, resulting in a decline in employment.
3345	Navigational, measuring, electromedical, and control instruments manufacturing	Output is used mostly by the defense, aerospace, ship, and transportation industries. Output is expected to grow at approximately the same rate as GDP because of an increase in the number of satellites and global positioning systems used in navigational systems. Productivity is projected to continue to grow, so employment is expected to increase only slightly.
3346	Manufacturing and reproducing magnetic and optical media	Output is used in the construction, motor vehicles, lighting and wiring equipment, computers, and communications industries. Output is projected to grow at the same rate as GDP. Productivity growth is projected to continue, resulting in no change in the level of employment.
3351	Electric lighting equipment manufacturing	Output is purchased by the construction industry, motor vehicle manufacturers, and individuals. Output is projected to grow more slowly than GDP. Productivity is projected to grow relatively fast; as a result, employment is expected to continue to fall.
3352	Household appliance manufacturing	Output is purchased mainly by individuals and by the real estate and construction industries. Output is projected to grow slightly slower than GDP. Employment is projected to continue to decline as a result of productivity growth.
3353	Electrical equipment manufacturing	Output is consumed as a capital investment by electric utilities and is used as an input by electrical and nonelectrical machinery manufacturers. Output is projected to grow very slowly as imports continue to rise. Improvements in productivity are expected to continue. Employment is projected to continue to decline, as it did in the preceding decade.
3359	Other electrical equipment and component manufacturing	Output is purchased as an investment by construction and by the motor vehicles and parts manufacturing industries. Output also is purchased by individuals for consumption and is used as an intermediate input in a variety of industries. Output is projected to grow at approximately the same rate as GDP. Continuing productivity growth is expected to result in a decline in employment.
3361	Motor vehicle manufacturing	Output is purchased by consumers and as investment. Output is projected to grow more slowly than GDP, because large incentives in the form of low interest rates and significant rebates will not be as prevalent in the coming decade. Productivity is expected to increase, although not as fast as it did in the preceding decade. Employment is projected to grow only slightly.

Table V-2. Factors affecting industry output and employment, 2004-14 — Continued

2002 NAICS code	Industry Title	Factors affecting output and employment
3362	Motor vehicle body and trailer manufacturing	Output is purchased by the motor vehicle manufacturing industry, various intermediate industries, and consumers. Output in this industry is projected to grow faster than GDP. Slower growth in motor vehicle manufacturing will affect the industry; however, a growing market for commercial semitrailers will offset some of the deceleration. An increase in consumer equipment also is expected to affect the industry. Productivity growth is expected to continue because of automation and advanced manufacturing methods. Because of improvements in productivity, employment is not projected to increase as fast as output.
3363	Motor vehicle parts manufacturing	Output is used in the motor vehicle manufacturing industry and in various intermediate industries. Consumers also purchase parts for their vehicles. Output is projected to grow at approximately the same rate as GDP. Employment is projected to rise only slightly as productivity continues to grow because of improved technology.
3364	Aerospace product and parts manufacturing	Output is purchased by the defense industry, is exported, and is used in the production of aircraft and missiles. Output is projected to grow faster than GDP because of increasing defense aerospace production and an improving trend in the demand for civilian aircraft. Productivity should continue to improve, causing employment to increase modestly.
3365	Railroad rolling stock manufacturing	Output is purchased as an investment and is used as an intermediate input in the rail transportation industry. Output is projected to grow more slowly than GDP. Productivity is projected to continue to improve, so employment is expected to continue to decline.
3366	Ship and boat building	Output is consumed by the military, by individuals, and as an investment in water transport and energy industries. Output is projected to grow at approximately the same rate as GDP. The Oil Pollution Act of 1990 requires the conversion of all tankers and tank barges to double hulls by 2015; many vessels will need refitting. Productivity is projected to increase faster than output, resulting in a small decline in employment.
3369	Other transportation equipment manufacturing	Output is consumed by individuals and by the military. Output is projected to increase as the demand for motorcycles, bicycles, golf carts, and other recreational vehicles rises. Productivity is projected to improve slowly, and employment is expected to increase.
3371	Household and institutional furniture and kitchen cabinet manufacturing	Output is purchased by individuals and by the construction industry. Output is expected to continue growing at its current rate, two-thirds that of GDP. Productivity also is projected to continue to grow, so a slight decline in employment is expected.
3372	Office furniture (including fixtures) manufacturing	Output is typically purchased as an investment by offices and is projected to grow at roughly the same rate as GDP. The growth in administrative and support services will drive demand in this industry. Employment is projected to increase only slightly as a result of increases in productivity.
3379	Office furniture and related product manufacturing	Output is purchased mainly by individuals and as an investment in some industries. Output is projected to grow more slowly than GDP. Growth in productivity is projected to cause a small decline in employment.
3391	Medical equipment and supplies manufacturing	Output is consumed as a capital purchase or as an intermediate input by hospitals and other health care services. Output is projected to continue to grow faster than GDP, although the rate of growth is expected to be slightly less than that in the preceding decade because of some overseas outsourcing of production and of research and development. Employment is projected to continue to grow slowly, partly because of the expected effect of outsourcing on employment.

**Table V-2. Factors affecting industry output and employment, 2004-14 — Continued**

2002 NAICS code	Industry Title	Factors affecting output and employment
3399	Other miscellaneous manufacturing	Output is consumed as an input in a variety of industries, such as apparel and retail trade. Output is projected to grow at its historical rate, about two-thirds the growth rate of GDP. Employment is projected to fall, because productivity is expected to grow faster than output.
42	Wholesale trade	Output is consumed as a trade margin on goods sold at various stages of production. Output is projected to grow about twice as fast as GDP. However, big box retailers are expected to put some downward pressure on this industry. Improved technology, such as electronic data interchange and radio frequency identification tags, will make storage, tracking, and shipping more efficient and lessen the demand for employment, which is still projected to increase slightly in the next decade, because output is expected to grow faster than productivity.
44-45	Retail trade	Output is consumed as a trade margin on goods sold to individuals and is projected to grow faster than GDP. Productivity is projected to increase because of gains in technology. However, productivity is not expected to grow as quickly as output, so employment is projected to increase slightly.
481	Air transportation	Output is consumed by individuals and as a transportation margin on the shipment of goods. Output is projected to grow in the United States and abroad as GDP and the population increase. Cargo traffic is expected to increase with the economy and growing world trade. Productivity is projected to continue to grow, but at a slower rate than in the previous decade. Because output is projected to grow faster than productivity, employment is expected to increase modestly.
482	Rail transportation	Output is consumed both by individuals and as a transportation margin on nearly all manufactured products and public utilities. Output is projected to grow at approximately the same rate as GDP. Demand for railroad freight service is expected to increase as the economy expands. Intermodal systems, which utilize trains to transport goods over longer distances, should come into greater use. Employment is projected to fall slightly as productivity increases at the same rate as GDP. Improvements in productivity include a more widespread use of computers for tracking, dispatching, and monitoring trains.
483	Water transportation	Output is consumed both by individuals and as a transportation margin on shipping goods to market. Output is projected to grow more slowly than GDP. Plans to introduce more ferries along the congested coasts to ease the burden on highways, in addition to a likely increase in shipments of primary products for the energy industry (especially coal), will help expand output and employment on internal U.S. waterways.
484	Truck transportation	Output is consumed as a transportation margin on shipping goods to market and by individuals. Output is projected to grow at approximately the same rate as GDP as the population increases. Productivity is projected to grow at a slower rate than output, so employment is projected to increase slightly.
485	Transit and ground passenger transportation	Output is consumed by individuals, by businesses, and by State and local governments for school transportation. Output is expected to grow slightly more slowly than GDP. Demand is expected to increase with population growth. Employment is projected to grow at approximately the same rate as output, because productivity growth is expected to be very slow.
486	Pipeline transportation	Output is consumed as a transportation margin on the shipment of petroleum. Output and employment are projected to fall slightly as productivity grows very slowly.

Table V-2. Factors affecting industry output and employment, 2004-14 — Continued

2002 NAICS code	Industry Title	Factors affecting output and employment
487	Scenic and sightseeing transportation	Output is purchased mostly by individuals, but some is used as an input in various industries. Output is projected to grow faster than GDP. Retirement of the baby boomers will increase demand for this industry's services. Employment in the industry is projected to grow faster than total U.S. employment. Productivity growth is expected, but it is not likely to be as fast as growth in output.
488	Support activities for transportation	Output is purchased by other transportation industries and is used as an input in other industries. Output is expected to grow faster than GDP; packaging, freight, cargo arrangement, and other transportation-related services are expected to play a key role in logistics management. Productivity is projected to grow at a slower rate than output; employment is projected to continue to grow.
491	Postal Service	Output is consumed as an intermediate input by most industries and by individuals. Output is projected to grow slowly; growth will stem from an increase in deliveries of packages, but will be offset by increasing competition from alternative delivery systems. Employment is projected to decline slightly as a result of automation, competition from alternative delivery systems, and the increasing use of electronic communications. An increase in the number of rural routes is expected only to partially offset the negative impacts on employment from the other factors.
492	Couriers and messengers	Output is consumed by businesses and individuals and is projected to grow more slowly than GDP. The courier industry has been aided by the growth of electronic commerce and catalog sales. However, the increasing use of e-mail and fax machines has had a deleterious effect on the messenger industry.
493	Warehousing and storage	Output is consumed as a transportation margin on shipping goods to market and by individuals. Output is projected to grow faster than GDP. Manufacturers will continue to outsource distribution functions to warehousing companies. Inventory management and just-in-time shipping, as well as the expansion of electronic commerce, will continue to increase demand for the logistical services of the warehousing industry. Productivity is projected to grow at about half the rate of output, resulting in an increase in employment.
5111	Newspaper, periodical, book, and directory publishers	Output is purchased mostly by individuals and is projected to increase at the same rate as GDP. Increased market activity can be expected in custom publishing and ethnic publications. Productivity is projected to grow at the same rate as output, resulting in little growth in employment.
5112	Software publishers	Output is purchased as an investment and is used as intermediate input to many industries. Output is projected to grow much faster than GDP. Strong growth in the video games market will be part of the growing demand in the software publishing industry. Productivity is expected to continue to grow, but not as rapidly as output; employment in the industry also is projected to grow faster than total U.S. employment. This industry is projected to be one of the 10 fastest growing industries, in terms of wage and salary employment, over the 2004-14 projection period.
512	Motion picture, video, and sound recording industries	Output in this industry is consumed as an input to motion picture theaters and to the television broadcasting industry. Output is projected to increase as a growing population continues to be entertained by movies. Productivity is projected to increase, but at a slower rate than output; consequently, employment is projected to increase.
515	Broadcasting (except Internet)	Output is purchased mostly by individuals and as an intermediate input in the broadcasting and telecommunications industries. Output is projected to grow slightly faster than GDP. Cable and other subscription services are expected to grow rapidly; offerings from satellite radio services such as XM and Sirius are expected to grow faster than broadcast services. Employment is projected to increase as a result of productivity growing more slowly than output.

**Table V-2. Factors affecting industry output and employment, 2004-14 — Continued**

<i>2002 NAICS code</i>	<i>Industry Title</i>	<i>Factors affecting output and employment</i>
517	Telecommunications	Output is consumed by individuals, government, business, and other institutions. Output is projected to grow slightly faster than GDP. Revenue gains will come from new services such as video on demand and other, yet more sophisticated, services. The future of the industry is in wireless, cable, and satellite telecommunications. New products, such as WiMax wireless, 4G wireless, and VoIP calling, will encourage businesses to rethink their structure and favor wireless, cable, and satellite companies. Productivity is projected to grow more quickly than output, resulting in a small decline in employment.
516, 518, 519	Internet and other information services	Most output is used as an intermediate input by many other industries; some output is consumed by individuals. Output is projected to grow much faster than GDP, with the Internet expanding and branching out as the amount of information generated continues to increase. Productivity is projected to continue to grow at a rapid pace as well, however, not expected as fast as output. Employment is projected to continue to grow, but at a slower rate than during the previous decade.
521,522	Monetary authorities, credit intermediation, and related activities	Output is consumed by individuals and by firms and is projected to grow slightly faster than GDP. This industry includes depository credit intermediation establishments, such as banks and credit unions, and nondepository credit intermediation establishments, such as credit card and financing companies. Demand for services provided by nondepository institutions is expected to grow faster than demand in depository institutions. In the overall industry, productivity is projected to grow slightly more slowly than output, resulting in a small increase in employment.
523	Securities, commodity contracts, and other financial investments and related activities	Output is consumed by individuals and by financial firms. Output is projected to grow much faster than GDP. Population growth and increased saving by baby boomers will increase demand. Fairly rapid gains in productivity are expected because of further consolidation, improved technology, and automation. Productivity growth, however, is expected to be slower than output growth. As a result, employment is projected to increase.
5241	Insurance carriers	Output is purchased by individuals and a variety of intermediate industries. Output is projected to increase as a growing population demands more insurance of all kinds, particularly health insurance. Productivity is expected to increase at a slower rate than output, and employment is projected to increase as a consequence.
5242	Agencies, brokerages, and other insurance related activities	Output is purchased mostly by the insurance carrier industry. Output is projected to grow, with a continuing trend of brokers and agencies taking away business from insurance carriers. Employment also is projected to continue to grow as productivity growth decelerates.
525	Funds, trusts, and other financial vehicles	Output is purchased mostly by individuals and is projected to increase more slowly than GDP. Productivity is projected to grow slowly, resulting in some growth in employment.
531	Real estate	Output is purchased by individuals and businesses as rent, real estate commissions, or fees. Output is projected to continue growing as the demographic composition of the population changes, driving the need for various types of suitable housing. Employment is projected to increase, because output is expected to grow faster than productivity.
5321	Automotive equipment rental and leasing	Output is purchased by individuals and a variety of industries, including wholesale trade. Output is projected to continue to increase, with firms preferring to lease and rent motor vehicles over purchasing them, because of the associated cost savings. In addition, many equipment rental companies will offer a mix of services, including rental, sales, dealership, and repair. More employees will be needed in order to expand the services offered. Employment is projected to increase, but at a slower rate than output.

Table V–2. Factors affecting industry output and employment, 2004–14 — Continued

2002 NAICS code	Industry Title	Factors affecting output and employment
53, 225, 323	Consumer goods rental and general rental centers	Output is purchased primarily by individuals and is projected to grow more slowly than GDP. Growth in this industry is affected by consumers' preference for leasing or renting rather than purchasing, because of the smaller capital outlays required when renting or leasing. Employment is projected to increase slightly as industry productivity grows relatively slowly.
5324	Commercial and industrial machinery and equipment rental and leasing	Output is purchased as an intermediate input in wholesale and retail trade and in construction. Output is projected to continue to grow at approximately the same rate as GDP. Productivity is projected to grow slowly, resulting in healthy employment growth.
533	Lessors of nonfinancial intangible assets (except copyrighted works)	Output is used as an intermediate input and is exported. Establishments in this industry are engaged in assigning various rights, such as patents, trademarks, brand names, and franchise agreements, to assets. Output is projected to continue to demonstrate rapid growth. Productivity levels also are projected to rise rapidly, resulting in modest growth in employment.
5411	Legal services	Output is purchased by individuals and by a wide variety of industries, including wholesale and retail trade. Output is expected to increase, with growth stimulated by increased litigation as a result of a rise in the amount and complexity of business practices. Employment is projected to increase as well, because productivity is expected to grow more slowly than output. The increasing utilization of paralegals in legal services and the trend toward hiring more in-house lawyers are expected to increase employment.
5412	Accounting, tax preparation, bookkeeping, and payroll services	Output is purchased by individuals and by a variety of industries and is projected to increase as the rest of the economy grows. Productivity is projected to grow slowly, resulting in employment growth.
5413	Architectural, engineering, and related services	Output is purchased as an investment and is used as an intermediate input to many industries. Output is projected to continue to increase, but not as rapidly as it did in the 1990s. Employment also is projected to grow at a slower rate than it did in the previous decade. Demand for commercial architectural services has been waning for the past few years; indications are that large-scale residential projects may be starting to cool now. The communications revolution in the 1990s generated a good deal of growth in designing systems and devices that have now become commodities.
5414	Specialized design services	Output is purchased by most industries and by individuals. Output and employment are projected to increase. Productivity also is projected to grow, but at a slower rate than output. New computer graphics software makes graphic design and layout easier to perform. Certain industrial products increasingly will be designed overseas. Interior design will not be susceptible to overseas outsourcing, but that component makes up only a small share of the industry.
5415	Computer systems design and related services	Output is used as an intermediate input and is purchased as an investment. Output is projected to continue to grow rapidly. Factors affecting this industry include the expansion of intranets, an increased need for remote access, and the growing importance of security. Productivity also is projected to increase rapidly, although not as fast as output. Employment is projected to continue to grow as well, but not as quickly as it did in the preceding decade. This industry is projected to be one of the 10 fastest growing industries, in terms of wage and salary employment, over the 2004–14 projection period.

**Table V-2. Factors affecting industry output and employment, 2004-14 — Continued**

2002 NAICS code	Industry Title	Factors affecting output and employment
5416	Management, scientific, and technical consulting services	Output is used as an intermediate input in many industries. Output is projected to continue to grow as more companies hire consultants for various projects. Areas such as planning and logistics, as well as compliance with environmental regulations, employee benefits, and compliance with workplace safety regulations, should continue to drive demand for these services. Some productivity growth is expected, although employment is projected to continue growing at a healthy rate. This industry is projected to be one of the 10 fastest growing industries, in terms of wage and salary employment, over the 2004-14 projection period.
5417	Scientific research and development services	Output is used as an intermediate good, is purchased by the Federal Government, and is consumed by individuals. Output is projected to continue to grow faster than GDP. Research and development (R&D) in the physical sciences and in engineering should grow faster as manufacturing industries—particularly pharmaceuticals—outsource their R&D. Because R&D in the social sciences and the humanities is less sensitive to business cycles and is not directly linked to new developments in technology and industrial output, this segment should grow at a slower pace than the physics and engineering segments of the industry. As a result of large gains in productivity, employment in the overall industry is projected to grow more slowly than the average for the total U.S. economy.
5418	Advertising and related services	Output is purchased by retail and wholesale trade, food services establishments, and real estate. Output is expected to continue to grow rapidly. New opportunities created by the Internet, international business markets, and the further specialization of firms will contribute to growth in this industry. Productivity also is expected to continue to grow, resulting in moderate employment growth.
5419	Other professional, scientific, and technical services	Output is purchased primarily as an intermediate input and by individuals for personal consumption. Output is projected to grow slightly faster than GDP. Employment also is projected to grow, although not as quickly as output. Growth of the cat population, coupled with pet owners' greater willingness to spend money on advanced feline and other veterinary medical care, will drive demand. Photographic services will increase slowly as improvements in camera technology and reduced prices allow more consumers to take photographs for themselves and as more commercial photographers work as self-employed contractors.
55	Management of companies and enterprises	Output is used as an intermediate input and is exported. Output is projected to continue to grow faster than GDP. Productivity also is projected to continue growing rapidly, although not as quickly as output. Employment is expected to increase.
5611	Office administrative services	Output is consumed primarily as an intermediate input in a variety of industries. Output is projected to grow rapidly, although at a slower rate than in the previous decade. Employment and productivity are projected to increase, at about half the growth rate of output. This industry is projected to be one of the 10 fastest growing industries, in terms of wage and salary employment, over the 2004-14 projection period.
5612	Facilities support services	Output is consumed as an intermediate input to both manufacturing and services. Output is expected to increase at about the same rate as GDP. Productivity is projected to decrease slightly, causing employment to increase faster than output. Businesses realize the importance of maintaining, securing, and efficiently operating their facilities. This industry is projected to be one of the 10 fastest growing industries, in terms of wage and salary employment, over the 2004-14 projection period.

Table V-2. Factors affecting industry output and employment, 2004-14 — Continued

2002 NAICS code	Industry Title	Factors affecting output and employment
5613	Employment services	Output is purchased as an intermediate input in many industries. Output is projected to grow faster than GDP. Because productivity growth is relatively slow in this industry, employment also is projected to increase. Business reliance on temporary help services and employment placement agencies is expected to continue, because of these sources of employment tend to endure business cycles by expanding or diversifying the categories of workers they offer. This industry is projected to be one of the 10 fastest growing industries, in terms of wage and salary employment, over the 2004-14 projection period.
5614	Business support services	Many intermediate industries purchase business support services. Output is projected to continue to increase more rapidly than GDP. Productivity also is projected to grow rapidly, although not as fast as GDP. As a result, employment is expected to increase moderately.
5615	Travel arrangement and reservation services	Output is purchased by individuals and as an intermediate input and is projected to grow. Employment growth is projected to be minimal, primarily the result of increasing productivity. The number of retiring baby boomers, who have time and money to spend on travel, is expected to increase. The majority of the growth in this sector is expected in other services, which include tour operators, condominium time-share exchange services, ticket offices, ticket agencies, and reservation services.
5616	Investigation and security services	Output is used primarily as an intermediate input in various business services. Output is projected to grow more slowly than GDP. Because productivity is projected to fall, employment is projected to rise faster than output. Increased post-9/11 security awareness is still spurring growth in this industry. Private firms are taking over duties both investigative and protective, formerly performed by police. An increase in employment background checks and increasing demand for investigative services to solve Internet-based crimes such as identity theft, intellectual property theft, and harassment also have contributed to growth in this industry.
5617	Services to buildings and dwellings	Output is purchased by individuals and many industries, including real estate, educational services, and hotels. Output is projected to continue to grow with the population and number of buildings that will need to be serviced by this industry. Employment also is projected to grow, but not as quickly as output, because of improvements in productivity. As residential construction in warmer States grows, so will demand for these services, particularly landscaping.
5619	Other support services	Output is used as an intermediate input to various business services. Industry output is projected to fall slightly. Employment is projected to remain at its current level as a result of a small drop in productivity.
5621	Waste collection	Output is consumed by various industries and by individuals. Output and employment are projected to increase, even though technological improvements are expected to occur. Demand for waste collection will increase with new residential construction and as more communities implement or mandate the recycling of materials. Automated and semiautomated collection methods are expected to contribute to improvements in productivity, but demand for services will grow faster than productivity, resulting in employment growth.
56, 225, 629	Waste treatment and disposal and waste management services	Output is consumed by various industries and is expected to grow more slowly than GDP. Employment is projected to grow slightly more slowly than output, because of small productivity gains. As people produce more waste, there will continue to be a need for landfills and material recovery facilities. Optical sorters and other labor-saving technologies are being implemented at recycling facilities. However, these improvements are not expected to have a significant effect on productivity growth for the entire industry.

**Table V–2. Factors affecting industry output and employment, 2004–14 — Continued**

2002 NAICS code	Industry Title	Factors affecting output and employment
6111	Elementary and secondary schools	Output is consumed by individuals and is projected to grow faster than it did in the previous decade. Low productivity growth, which is typical for this industry, and a greater share of K–12 students attending private schools will cause employment to grow.
61, 126, 113	Junior colleges, colleges, universities, and professional schools	Output is consumed by individuals and by government. Output is projected to grow as the college-aged population increases and as workers in the labor force utilize this industry to improve their skills, for ongoing education, and to make a transition into a new career. Productivity is projected to fall slightly, and employment is projected to grow faster than output.
6, 114, 611, 561, 166,110	Other educational services	Output is purchased by individuals and by government. Output is projected to grow, with strong demand for self enrichment education, as the baby boomers enter retirement and with additional demand for educational consulting and tutoring services geared towards youth. Productivity is expected to decline, causing an even greater increase in employment growth.
621, 162, 126, 213	Offices of health practitioners	Output is consumed almost entirely by individuals and is projected to grow faster than GDP as a growing and aging population demands more physician care. Some productivity gains are expected—for example, in areas such as medical record keeping; however, these improvements are expected to be relatively small. Employment is projected to increase at a rate similar to output.
6216	Home health care services	Output is consumed entirely by individuals and is projected to grow faster than GDP. Employment is projected to grow even faster than output. Both output and employment are expected to grow as a result of more patients receiving routine and post-operative care at home in order to contain costs. Relatively little work in this industry can be improved through technology, and new technology is usually slow to be implemented. The industry is projected to be one of the 10 fastest growing industries, in terms of wage and salary employment, over the 2004–14 projection period.
621, 462, 156, 219	Outpatient, laboratory, and other ambulatory care services	Output is consumed mostly by individuals and is projected to grow at roughly the same rate as GDP. Employment is projected to increase because very little productivity growth is expected. More patients are expected to be treated in specialty outpatient clinics, such as kidney dialysis centers and mental health facilities, rather than hospitals. Demand for outpatient services is expected to grow with the elderly population. Ambulance services also will increase with a growing population and higher utilization of emergency care by patients without insurance. This industry is projected to be one of the 10 fastest growing industries, in terms of wage and salary employment, over the 2004–14 projection period.
622	Hospitals, private	Output is consumed by individuals and is projected to increase as the population ages. Employment is projected to increase because labor-saving technology is implemented only very slowly in the industry. Employment in the largest segment—general medical and surgical hospitals—is projected to grow in line with employment in the overall hospital industry. Employment in specialty hospitals is expected to grow faster than the industry average as more patients seek treatment in these facilities. By contrast, employment in psychiatric and substance abuse hospitals is expected to decline as services shift to outpatient facilities.
6231	Nursing care facilities	Output is purchased by individuals and is expected to increase more slowly than it did in the previous decade. Despite a growing elderly population, many are living longer and with fewer illnesses; many will choose either to have home health care or to live in assisted living facilities. Employment is projected to increase at approximately the same rate as output.

Table V–2. Factors affecting industry output and employment, 2004–14 — Continued

2002 NAICS code	Industry Title	Factors affecting output and employment
623, 262, 336, 239	Residential care facilities	Output is consumed by individuals and is expected to continue to grow faster than GDP. Employment also is expected to grow, as productivity growth remains flat. Demand for residential care services will increase because of growth in the active elderly population, many of whom prefer to live in assisted living facilities instead of nursing homes. This industry is projected to be one of the 10 fastest growing industries, in terms of wage and salary employment, over the 2004–14 projection period.
624, 162, 426, 243	Individual, family, community, and vocational rehabilitation services	Output is consumed by individuals and is expected to grow faster than during the previous decade. Employment is expected to grow at a similar rate, because of stagnant productivity growth. Demand for services for the elderly and the disabled is driven primarily by population growth; because much of the funding for these services is from private sources, government budgetary fluctuations are expected to have minimal impact.
6244	Child day care services	Output is consumed entirely by individuals and is expected to continue to grow as the number of women in the labor force grows and the baby-boom echo enters childbearing years. Employment also is expected to grow as productivity remains stagnant.
7111	Performing arts companies	Output is purchased by individuals, by food services and drinking places, and as an input to other industries. Output is projected to increase more slowly than GDP. Attendance at performing arts events has not grown significantly in recent decades, a trend that should continue. The segment of this industry that includes musical groups and all other performing arts companies is expected to grow more rapidly than theater companies and dinner theaters, largely because the former includes musical groups and artists, carnivals, and circuses, all of which cater strongly to youths. Productivity is projected to increase slowly, resulting in employment growth.
7112	Spectator sports	Output is consumed by individuals and by radio and television broadcasting. Output is projected to grow as a larger population with more leisure time continues to be interested in sports as a form of entertainment. Productivity gains in this industry are expected to be minimal, and as a result, employment is projected to grow only slightly more slowly than output.
71, 137, 114	Promoters of events, and agents and managers	Output is consumed by individuals, independent artists, writers, and performers and as an input to other industries. Output is projected to grow at roughly the same rate as GDP. Employment is projected to grow more slowly than output as a result of productivity growth.
7115	Independent artists, writers, and performers	Output is consumed mostly as an input to performing arts companies and is projected to grow at approximately the same rate as GDP. Productivity growth is expected to be moderate. This industry is projected to be one of the 10 fastest growing industries, in terms of wage and salary employment, over the 2004–14 projection period. Wage and salary employment accounts for approximately 15 percent of the total employment in the industry and typically includes administrative support for artists, writers, and performers. Total employment, including self-employed and unpaid family workers, is projected to grow at roughly the same rate as that of the total U.S. economy.
712	Museums, historical sites, and similar institutions	Output is consumed by individuals and will continue to grow as public interest in science, art, and history increases because of growth in both leisure time and disposable income. Employment is projected to increase as productivity grows more slowly than output.
713	Amusement, gambling, and recreation industries	Output is purchased by individuals and is expected to continue to grow as increasing numbers of retirees spend more time and money on leisure activities. Productivity is projected to grow, but at a slower rate than output, resulting in increased employment.

**Table V-2. Factors affecting industry output and employment, 2004-14 — Continued**

2002 NAICS code	Industry Title	Factors affecting output and employment
721	Accommodation	Output is consumed by individuals and businesses and is projected to grow as a result of demand for short-term lodging. Because this is a labor-intensive industry with a largely hourly-wage workforce, productivity should grow slowly; therefore, as output increases, so, too, should employment.
722	Food services and drinking places	Output is consumed primarily by individuals and is expected to increase as a result of demographic factors such as increases in population, growth of personal income, increased leisure time, and a rise in the number of dual-income families. Much of the food services industry is labor intensive and does not lend itself well to enhancements in productivity. Many of the productivity gains already have been realized; hence, employment is projected to increase.
8111	Automotive repair and maintenance	Output is consumed primarily by individuals and is projected to increase more slowly than it did in the previous decade. Productivity growth is projected to be very slow; employment is expected to increase at a rate similar to that of output. Factors moderating growth include improvements in the durability of cars and slower growth in the driving age population.
8112	Electronic and precision equipment repair and maintenance	Output, which is purchased as an input by many industries and is consumed by individuals, is projected to remain flat over the next decade. Automated repair and self-repairing equipment are expected to contribute to productivity growth and a decline in employment.
8113	Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance	Output is used as an intermediate input in many industries and is projected to continue to grow faster than GDP. Productivity is expected to grow faster than average, but slower than output. Employment is projected to continue to grow modestly.
8114	Personal and household goods repair and maintenance	Output is used as an intermediate input in telecommunications and other industries and is consumed by individuals. Output is projected to continue to grow relatively slowly. Productivity is projected to increase at approximately the same rate as output, resulting in very little employment growth.
8121	Personal care services	Output is consumed mostly by individuals and is expected to continue to grow as the population grows, as incomes rise, and as demand for personal care increases. Productivity is projected to grow more slowly than output, resulting in employment growth that is similar to that of the total U.S. economy.
8122	Death care services	Output is purchased mainly by individuals and is projected to continue to grow as the population and the number of deaths increase. Employment also is projected to increase because of declining productivity.
8123	Drycleaning and laundry services	Output is used mainly by individuals, but is also contracted for by other industries, such as food services establishments. Output is expected to grow as the affluent population requiring these services increases. Central drycleaning facilities that process work for multiple stores will contribute to productivity growth, but overall, productivity is projected to grow more slowly than output, resulting in modest employment growth.
8129	Other personal services	Output is purchased by individuals and is expected to continue to grow as the population increases; demand for services such as parking lots and garages will influence much of the growth in this industry. Some gains in productivity are expected, but output will grow faster. Employment is projected to grow slightly faster than that of the total U.S. economy.

Table V-2. Factors affecting industry output and employment, 2004-14 — Continued

2002 NAICS code	Industry Title	Factors affecting output and employment
8131	Religious organizations	Output is consumed entirely by individuals and is projected to grow faster than it did in the preceding decade. Growing demand for religious advocacy groups is expected to continue. Employment is projected to continue to increase, but at a slower rate because of improvements in productivity.
81, 328, 133	Grantmaking and giving services and social advocacy organizations	Output is consumed mostly by individuals and is projected to continue to grow at a healthy rate. An increasingly affluent population involved in advocacy groups for causes such as human rights and conservation will continue to fuel growth in this industry. Productivity is expected to increase as the application of modern information technology is incorporated into communications, marketing, fundraising, decision-making, and management. Productivity is expected to continue to rise, but not as quickly as output. As a result, employment is projected to grow.
81, 348, 139	Civil, social, professional, and similar organizations	Output is consumed mostly by individuals and is expected to increase slightly faster than the population because of rising demand for professional networking and political organizations. Employment is projected to grow at approximately the same rate as output, primarily because of stagnant productivity growth.
814	Private households	Output is purchased by individuals and is expected to grow very little. Government workplace regulations make the use of private household workers expensive, relative to hiring specialized firms. Employment is projected to decline slightly over the next decade because of improvements in productivity.
NA	Federal electric utilities	Output is projected to increase as the number of end users grows. Productivity is projected to grow faster than output, resulting in declining employment.
NA	Federal enterprises, except the Postal Service and electric utilities	Output is directed mostly to the finance industries and is projected to grow as the demand for federally delivered services increases. Productivity is projected to continue to grow faster than output, resulting in a decline in employment.
NA	Federal Government, except enterprises	Output is allocated to defense and nondefense compensation and is projected to increase. After years of decline, employment is projected to rise slightly because of an increasing need for jobs related to homeland security, emergency preparedness, public health, and information analysis.
NA	Federal Government capital services	Output is projected to grow slightly. No employment is counted in this sector.
NA	Local government passenger transit	As towns and cities continue to grow, this industry will develop and expand. Limited productivity growth is expected to result in increasing employment.
NA	Local government enterprises, except passenger transit	Output is consumed mostly by individuals and is projected to continue to grow as it did in the preceding decade. Employment is projected to increase as a result of increasing demand.
NA	Local government hospitals	Output is projected to increase as demand for health care for the elderly and the uninsured rises in government hospitals. Employment is projected to increase marginally. Recent employment gains are due to an overall increase in demand for health care, especially among the uninsured and among Medicare or Medicaid patients who use local government hospitals.
NA	Local government educational services	Output growth will result from increased spending on education as all levels of government continue to focus on the performance of K-12 education. Growth will be moderated by a low level of enrollment growth as the baby boom echo exits the public school system. Low productivity growth is expected to cause employment to increase, but not as quickly as output.

**Table V-2. Factors affecting industry output and employment, 2004-14 — Continued**

<i>2002 NAICS code</i>	<i>Industry Title</i>	<i>Factors affecting output and employment</i>
NA	Local government, excluding enterprises, educational services, and hospitals	Output is projected to continue to grow as it did in the previous decade, spurred by increasing demand for services from local governments. Employment also is projected to continue to grow, largely as a result of population increases. Local governments increasingly are outsourcing non-core functions, but Homeland Security-related employment growth is expected to continue.
NA	State government enterprises	Output is expected to continue to grow at roughly the same rate as in the previous decade. Employment growth is projected to continue to be marginal.
NA	State government hospitals	Output is projected to grow. Recent gains in output appear to be caused by uninsured and underinsured patients seeking treatment in government hospitals instead of in more expensive private facilities. Improvements in productivity are expected to result in declining employment. Employment in State psychiatric hospitals is expected to decline as more patients are treated in outpatient facilities.
NA	State government educational services	Output, which is based on State spending on higher education, is projected to grow as enrollments continue to increase, both among traditional college students and among current workers who take classes to learn new job skills or enter new careers. Employment growth is expected to result from increased enrollments, and also from institutions hiring more part-time adjunct faculty.
NA	State government, excluding enterprises, educational services, and hospitals	Output is projected to grow at a rate similar to that of the past half decade. Employment is projected to grow as spending on homeland security continues and demand for services from State governments increases.
NA	State and local government capital services	Output is projected to grow more slowly than it did in the previous decade. There is no employment in this sector.
NA	Owner-occupied dwellings	Output is projected to grow at the same rate as it did during the previous decade. There is no employment in this sector.

**Table V-3. Factors changing occupational utilization, 2004-14**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
11-1031	Legislators	As the number of legislators remains generally fixed while employment in other parts of government grows, small decreases are projected in State and local government.
11-2011	Advertising and promotions managers	Small increases are projected to occur in all industries as the complexity and diversity of the tasks and markets these workers must deal with increase.
11-2021	Marketing managers	Small increases are expected in all industries as the complexity of marketing increases.
11-2022	Sales managers	As the complexity of sales management increases because of Internet sales and expanding sales to international markets, small increases are projected in all industries.
11-2031	Public relations managers	A small increase in advertising and related services is expected as other industries outsource public relations services to this industry.
11-3021	Computer and information systems managers	Small increases are expected in all industries as firms continue to embrace new technologies and employ more computer specialists, resulting in an increased demand for managers.
11-3041	Compensation and benefits managers	Small increases in all industries are projected as the business environment and court rulings continue to set standards in benefits, increasing the demand for compensation and benefits managers.
11-3042	Training and development managers	Small increases in all industries are expected as organizations strive to keep their new and existing employees trained with current skills.
11-3061	Purchasing managers	All industries are projected to experience small decreases as the Internet allows purchasing information to be obtained more easily and improved electronic data interchange systems make transactions easier to process, resulting in smaller purchasing departments.
11-9011	Farm, ranch, and other agricultural managers	Small increases are projected in most industries as more farmland is converted to either corporate or absentee ownership, requiring professional managers.
11-9031	Education administrators, preschool and child care center/program	A small decrease is expected in child day care services as day care centers become larger and fewer administrators are able to oversee the same number of workers. A small increase is expected in State and local government educational services as more publicly run preschools are introduced.
11-9033	Education administrators, postsecondary	Small decreases are expected in colleges, universities, and professional schools as more schools cater to working adults, who require fewer student services and student services administrators.
11-9051	Food service managers	A moderate decrease is expected in State and local government educational services, and a small decrease is expected in nursing care facilities, as food services increasingly are contracted out.
11-9141	Property, real estate, and community association managers	Small increases are expected in activities related to real estate and in lessors of real estate as a result of the continuing shift from owner-operator to professional third-party management.
13-1022	Wholesale and retail buyers, except farm products	Increased efficiencies from mergers and consolidation within the retail industry are expected to cause small decreases in all industries.
13-1051	Cost estimators	Small increases are projected in all industries as the project-cost process continues to become increasingly complex.
13-1061	Emergency management specialists	Small increases are projected in all industries as the demand for emergency services continues to rise.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
13-1072	Compensation, benefits, and job analysis specialists	Small increases are expected in all industries, as the business environment and court rulings continue to set standards in benefits. .
13-1073	Training and development specialists	Small increases are projected in all industries as organizations strive to keep their existing and new employees trained with current skills.
13-1079	Human resources, training, and labor relations specialists, all other	Small increases are expected in all industries as employers increasingly seek the services of these workers to find, retain, and train workers, as well as handle labor relations.
13-1199	Business operation specialists, all other	Small increases are projected in most industries as organizations strive to become more efficient and streamline their operations.
13-2011	Accountants and auditors	A small increase is expected in accounting, tax preparation, bookkeeping, and payroll services as accounting firms focus more on their primary services and less on other services such as consulting. Moderate decreases are expected in all levels of government as accounting software increases efficiency and as governments outsource accounting services.
13-2041	Credit analysts	Small decreases are expected in all industries because of increased automation and enhanced productivity in credit reporting.
13-2051	Financial analysts	A moderate increase is projected in depository credit intermediation as banks continue to expand into new areas of financial products as a result of industry deregulation.
13-2052	Personal financial advisors	Small increases are expected in all industries as a result of the growing demand for financial services and financial planning and because of industry deregulation, which allows insurance agencies and banks to offer a wider range of products.
13-2081	Tax examiners, collectors, and revenue agents	A small decrease is projected in State government as income tax return processing becomes increasingly automated.
13-2082	Tax preparers	A moderate decrease is projected in accounting, tax preparation, bookkeeping, and payroll services because of the increasing use of tax preparation software.
15-1021	Computer programmers	Moderate decreases in all industries are expected because of improved productivity and the overseas outsourcing of some programming work.
15-1031	Computer software engineers, applications	Moderate increases are projected in all industries because of the increasing demand for computer applications software and specialized utility programs designed and developed to meet users' needs.
15-1032	Computer software engineers, systems software	Moderate increases are projected in all industries because of the continuing need to design and develop new operating systems-level software and network distribution software, as well as the need to implement and maintain systems that ensure information security.
15-1051	Computer systems analysts	Small increases are expected in all industries because of the increasing demand for efficient application of existing and new technologies.
15-1061	Database administrators	Small to moderate increases are expected in all industries as the amount of digital information continues to spread, requiring more of these workers to store and administer data effectively and securely.
15-1071	Network and computer systems administrators	Small to moderate increases are expected in all industries as organizations develop and expand network, Internet, and intranet systems and process more of their business transactions electronically.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
15-1081	Network systems and data communications analysts	Large increases are expected in all industries because of the continued expansion of wireless networks, firms' growing reliance on Web sites, and a greater emphasis on the security and protection of digital information.
15-2021	Mathematicians	Small decreases are projected in all industries except the Federal Government as other workers with mathematical backgrounds, such as engineers and computer scientists, are increasingly performing tasks traditionally done by mathematicians.
15-2031	Operations research analysts	Small declines are projected in computer systems design, direct insurance carriers, data processing, hosting, and related services, and in depository credit intermediation as these industries increasingly employ computer scientists and systems analysts, who have a broader range of computer skills, instead of operations research analysts.
15-2041	Statisticians	A small decrease is projected in research and development in the physical, engineering, and life sciences as new statistical computer software becomes easier to use and allows work usually done by statisticians to be performed by other workers.
15-2091	Mathematical technicians	Small decreases are projected in all industries as other workers with broader backgrounds increasingly are performing the tasks of mathematical technicians.
15-2099	Mathematical scientists, all other	Small decreases are projected in all industries as other workers with broader backgrounds increasingly are performing the tasks of mathematical scientists.
17-1011	Architects, except landscape and naval	A small increase is expected in engineering services as these firms expand their services and provide more architectural services. A small increase is expected in architectural and landscape architectural services as the consolidation of firms allows duplicate administrative workers to be eliminated.
17-1012	Landscape architects	Small increases are expected in engineering services and in architectural and landscape architectural services because of the widening range of activities landscape architects are assuming.
17-2011	Aerospace engineers	A small increase is projected in the Federal Government because of increasing defense research, development, testing, and evaluation.
17-2031	Biomedical engineers	Moderate increases are projected in research and development in the physical, engineering, and life sciences and in pharmaceutical and medicine manufacturing because of increasing interest in biomedical technology and pharmaceutical research. A moderate increase also is projected in medical equipment and supplies manufacturing as these engineers replace other engineers in developing increasingly complex equipment.
17-2041	Chemical engineers	Small increases are expected in engineering services and in research and development in the physical, engineering, and life sciences as the demand for biotechnology and nanotechnology research grows.
17-2051	Civil engineers	A small increase is expected in Federal Government because of increasing national security concerns.
17-2061	Computer hardware engineers	A moderate increase is projected in wired telecommunications carriers as engineers increasingly are sought to develop data communications systems. A small increase is projected in computer and peripheral equipment manufacturing in order to design and produce new computer and peripheral equipment. A small increase also is projected in communications equipment manufacturing because of the continued blending of computer and traditional communications equipment.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
17-2071	Electrical engineers	A small increase is projected in navigational, measuring, electromedical, and control instruments manufacturing because of growth in the development of electromedical products. A small increase also is projected in electric power generation, transmission and distribution as a result of growth in power demand and an aging infrastructure.
17-2072	Electronics engineers, except computer	A small increase is projected in the Federal Government because of the development of electronic equipment and systems for defense and security. A moderate increase is projected in wired telecommunications carriers in order to develop and maintain communications systems.
17-2081	Environmental engineers	A moderate increase is projected in engineering services because of an increasing interest in the prevention and remediation of environmental hazards. A small increase is projected in State governments as a result of the remediation and verification of compliance with environmental regulations.
17-2112	Industrial engineers	Small increases are expected in most industries because of the development and implementation of advanced manufacturing processes.
17-2121	Marine engineers and naval architects	Small decreases are expected in all industries because of continuing slow growth in ship design and construction.
17-2131	Materials engineers	A moderate increase is projected in research and development in the physical, engineering, and life sciences as more work is done developing nanomaterials and other customized materials. A small increase is projected in semiconductor and other electronic component manufacturing because of the development of semiconductors that allow a greater density of components in integrated circuits. A small increase also is projected in the Federal Government as a result of defense-related materials research.
17-2161	Nuclear engineers	A small increase is expected in electric power generation, transmission and distribution because of renewed interest in next-generation nuclear power plants.
17-2171	Petroleum engineers	A small increase is projected in oil and gas extraction as a result of planning for overseas drilling and the development of methods to extract more oil and gas from existing wells. A small decrease is projected in engineering services because of declining domestic petroleum reserves.
17-3011	Architectural and civil drafters	Productivity gains from more powerful and intuitive computer aided design and drafting systems are expected to lead to small decreases in all industries.
17-3012	Electrical and electronics drafters	A small decrease is expected in engineering services because of more powerful and intuitive computer aided design and drafting systems and because of overseas outsourcing of some drafting tasks.
17-3013	Mechanical drafters	A small decrease is expected in engineering services because of more powerful and intuitive computer aided design and drafting systems and because of overseas outsourcing of some drafting tasks.
17-3019	Drafters, all other	A small decrease is expected in engineering services because of more powerful and intuitive computer aided design and drafting systems and because of overseas outsourcing of some drafting tasks. A small decrease also is expected in employment services as the increasing specialization of drafters limits the use of temporary workers.
17-3023	Electrical and electronic engineering technicians	A moderate increase is projected in wired telecommunications carriers because of the increasing importance of computer telecommunications, and a small increase is expected in the Federal Government because of the development of electronic equipment and systems for defense and security.

**Table V–3. Factors changing occupational utilization, 2004–14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
17-3024	Electro-mechanical technicians	A moderate increase is projected in navigational, measuring, electromedical, and control instruments manufacturing as the combination of electronic and mechanical skills results in increasing demand for integrated systems design. A small increase in research and development in the physical, engineering, and life sciences is projected because of the development of combined electromechanical systems, particularly on the microscale.
17-3025	Environmental engineering technicians	Small increases are projected in engineering services and all other services to buildings and dwellings because of increasing environmental concerns.
17-3031	Surveying and mapping technicians	Small decreases are expected across all industries as global positioning systems and newer digital equipment allow survey crews to be smaller than they were in the past.
19-1022	Microbiologists	A small increase is expected in the Federal Government because of increasing funds for biomedical research.
19-1042	Medical scientists, except epidemiologists	Small increases are expected in all industries because of increases in medical research.
19-2012	Physicists	Small decreases are projected in all industries because of budget constraints at colleges and universities and in State and Federal agencies employing research physicists.
19-2042	Geoscientists, except hydrologists and geographers	A moderate decrease is expected in management, scientific, and technical consulting services as the environmental consulting industry continues maturing and many traditional geoscience consulting positions are filled by hydrologists and environmental scientists.
19-2043	Hydrologists	Small increases are expected in all industries as water conservation, groundwater contamination, deteriorating coastal environments, and rising sea levels become greater priorities.
19-3011	Economists	A moderate decrease are projected in management, scientific, and technical consulting services as firms increasingly utilize more specialized consultants, such as financial analysts, instead of general economists.
19-3031	Clinical, counseling, and school psychologists	Small increases are projected in elementary and secondary schools because of the increasing focus on the mental health of children and how it affects their learning. A small increase also is projected in outpatient mental health and substance abuse centers because of the increasing use of psychologists to help prevent and treat addictions.
19-3091	Anthropologists and archeologists	A small decrease is expected in management, scientific, and technical consulting services as the demand for anthropological and archaeological consulting grows more slowly than other types of business consulting.
19-4091	Environmental science and protection technicians, including health	Small decreases are projected in all industries as employers increasingly prefer at least a bachelor's degree in a natural science for employment, resulting in fewer technicians and more environmental scientists and hydrologists.
19-4092	Forensic science technicians	Moderate increases are projected in all industries as crime scene technicians and emerging technologies, such as DNA fingerprinting, increasingly are utilized in criminal investigations.
21-1012	Educational, vocational, and school counselors	Small decreases are expected in colleges, universities, and professional schools as more schools open that cater to working adults, who require fewer counseling services.
21-1013	Marriage and family therapists	A small increase is expected in State government, excluding education and hospitals, as more States offer marriage counseling services.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
21-1022	Medical and public health social workers	Small increases are expected in nursing care facilities and in other services for the elderly and persons with disabilities as people live longer with debilitating and terminal diseases and as patients, family, and friends, require more social work services dealing with disease.
21-1023	Mental health and substance abuse social workers	Small increases are expected in residential mental retardation facilities, outpatient mental health and substance abuse centers, and psychiatric and substance abuse hospitals as mental health social workers increasingly utilized as a lower cost alternative to treatment by psychologists and psychiatrists.
21-1093	Social and human service assistants	Small increases are projected in most industries because of cost containment efforts that likely will increase demand for the relatively lower paid social and human services assistants, especially in the elderly related industries. A small decline is projected in State government as contracting out of these services continues.
23-1011	Lawyers	Moderate increases are projected in State and local government as more staff attorneys are needed to handle the rising number of caseloads and to deal with a growing number of regulatory issues.
23-2011	Paralegals and legal assistants	Small increases in all industries are expected as firms substitute relatively lower cost paralegals for lawyers and law clerks.
23-2092	Law clerks	Small decreases are expected in all industries as firms replace law clerks with paralegals in an effort to contain the costs of delivering legal services.
23-2093	Title examiners, abstractors, and searchers	Small decreases are expected in all industries because of increased productivity caused by electronic databases and because tasks that were once handled by title examiners are now handled by paralegals.
25-1000	Postsecondary teachers	Small increases are expected across all industries as all types of institutions hire more part-time adjunct faculty.
25-2011	Preschool teachers, except special education	Small increases are projected in State and local government educational services as more States offer preschool services to young children.
25-2012	Kindergarten teachers, except special education	Small increases are projected in State and local government educational services as States and school districts continue to switch from half-day to full-day kindergarten programs.
25-2021	Elementary school teachers, except special education	Small increases are expected across all industries because of changing demographics and an increased emphasis on smaller class sizes in elementary schools.
25-2023	Vocational education teachers, middle school	An increasing emphasis on academic preparation instead of vocational training is expected to lead to small decreases in State and local government educational services.
25-2041	Special education teachers, preschool, kindergarten, and elementary school	Small increases are projected across all industries as a greater share of students is classified as needing special assistance, especially in the earlier grades.
25-2042	Special education teachers, middle school	Small increases are projected across all industries as a greater share of students is classified as needing special assistance.
25-2043	Special education teachers, secondary school	Small increases are projected across all industries as a greater share of students is classified as needing special assistance.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
25-4021	Librarians	Small decreases are expected in local government and private elementary and secondary schools, and in State and local government, excluding education and hospitals, as library tasks increasingly become automated and as library support staff are used more extensively. Small to moderate decreases also are expected in State, local, and private colleges, universities, professional schools, and junior colleges as library tasks increasingly become automated and support staff are used more extensively.
25-4031	Library technicians	Small decreases are expected in colleges, universities, and professional schools as increased growth in institutions that provide reduced library services, such as those catering to working adults, counter the increased reliance of libraries on library technicians. Small decreases also are expected in elementary and secondary schools as larger parochial schools decline in favor of small private schools, which are less likely to employ library support staff.
25-9021	Farm and home management advisors	A small decrease is projected in State and local government educational services as States move funding away from agriculture and farm services.
25-9031	Instructional coordinators	Small increases are expected in State and local government educational services as more instructional coordinators are hired to help teachers meet mandated improvements in student achievement.
27-1014	Multi-media artists and animators	A small increase is expected in advertising and related services as the demand for Internet-based advertisements grows faster than the demand for traditional print ads. Small increases also are expected in all other motion picture and video industries as computer-animated movies gain in popularity, and as multi-media artists and animators become increasingly involved in creating special effects. Small increases also are expected in software publishers as these workers are increasingly hired to design video games.
27-1021	Commercial and industrial designers	While many functions of the aerospace product and parts manufacturing industry are being outsourced, top-secret design will be kept in-house, which are expected to lead to a small increase in demand for commercial and industrial designers.
27-1022	Fashion designers	A large increase is projected in the apparel, piece goods, and notions merchant wholesalers industry as fashion lines are expanded to satisfy demand for affordable and stylish clothing.
27-1023	Floral designers	A small increase is expected in grocery stores as the number of stores with full-service floral departments expands. A small decrease is expected in miscellaneous nondurable goods merchant wholesalers as the number of florists that purchase flowers directly from growers increases, eliminating the need for wholesalers.
27-1024	Graphic designers	A small decrease is expected in specialized design services as computer graphics packages make it easier for nonartists and designers to create their own graphic designs. A small increase is expected in advertising and related services as electronic advertising forums grow faster than traditional print ads. A small increase also is expected in newspaper publishers as more newspapers are posted on the Internet.
27-1025	Interior designers	A small increase is expected in building material and supplies dealers as these dealers increasingly offer in-store design services to home remodeling customers. Small decreases are expected in furniture stores and in home furnishings stores as these establishments offer fewer in-store design services.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
27-2021	Athletes and sports competitors	A small decrease is expected in all other amusement and recreation industries because the portions of the industry that employ athletes are not expected to grow as rapidly as the recreational portions of the industry, such as miniature golf courses and billiard parlors.
27-2031	Dancers	A small decrease is projected in all other performing dance companies because of a reduction in concert dance settings.
27-2032	Choreographers	A small decrease is projected in the other schools and instruction industry because of reduced demand for recreational and professional dance instruction.
27-3011	Radio and television announcers	Small decreases are expected across all industries as the increasing use of syndication and pretaped shows and voice-overs reduce the demand for radio and television announcers.
27-3012	Public address system and other announcers	Small decreases are expected across all industries. Because few of these workers are needed per establishment, employment in this occupation is projected to grow more slowly than employment in other occupations found in the same industries.
27-3031	Public relations specialists	A small increase is projected in advertising and related services as more public relations services are outsourced from other industries to this one.
27-4013	Radio operators	A moderate decrease is expected across all industries as advances in technology, such as the replacement of two-way radio with cell phones, reduce the demand for these workers.
27-4021	Photographers	A small decrease is expected in newspaper publishers as fewer newspapers employ their own photographers and instead hire temporary contract photographers or use photographs from photography agencies.
29-1021	Dentists, general	A small decrease is projected in offices of dentists as more dental assistants and dental hygienists are hired to perform routine tasks that once were performed by dentists.
29-1022	Oral and maxillofacial surgeons	A small decrease is expected in offices of dentists as more dental assistants and dental hygienists are hired to perform routine tasks that once were performed by oral and maxillofacial surgeons.
29-1023	Orthodontists	A small decrease is expected in offices of dentists as more dental assistants and dental hygienists are hired to perform routine tasks that once were performed by orthodontists.
29-1029	Dentists, all other specialists	A small decrease is projected in offices of dentists as more dental assistants and dental hygienists are hired to perform routine tasks that once were performed by dentists.
29-1031	Dietitians and nutritionists	A moderate decrease is expected in nursing care facilities and a small decrease in State and local government, excluding education and hospitals, as dietitians and nutritionists are increasingly outsourced to other industries. A small increase is expected in the special food services industry as dieticians and nutritionists are increasingly outsourced from other industries to this one.
29-1041	Optometrists	Small decreases are expected in offices of optometrists, offices of physicians, and all other health and personal care stores as ancillary personnel take over some of the duties of optometrists.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
29-1051	Pharmacists	A very large increase is projected in grocery stores, and large increases are projected in department stores and in other general merchandise stores, as more of all these types of stores add pharmacies. A small increase is projected in drugs and druggists' sundries merchant wholesalers as more people buy drugs at the wholesale level. A moderate increase is projected in electronic shopping and mail-order houses as more people buy drugs through the Internet.
29-1071	Physician assistants	Moderate increases are expected in general medical and surgical hospitals and in offices of physicians as physicians assistants are increasingly used as cost-effective substitutes for physicians.
29-1081	Podiatrists	Moderate decreases are expected in offices of all other health practitioners as the demand for podiatry services grows more slowly than the demand for other services in this industry.
29-1111	Registered nurses	Small increases are projected in private and State and local government hospitals; specialty (except psychiatric and substance abuse) hospitals; offices of physicians; nursing care facilities; outpatient care centers; and the Federal Government, excluding postal service. Registered nurses are expected to occupy an increasing proportion of these industries as they are utilized as cost-effective substitutes for physicians and other highly paid employees. A small decrease is projected in home health care services as advances in medical technology allow lower skilled workers, such as home health aides, to perform many of the duties of registered nurses.
29-1121	Audiologists	A moderate decrease is expected in offices of physicians as more physicians hire ear technicians in place of audiologists. A small decrease is expected in general medical and surgical hospitals and in the offices of physical, occupational and speech therapists, and audiologists because other portions of these industries are expected to grow faster than the portions employing audiologists. A small decrease is expected in all other health and personal care stores as these stores become more likely to hire hearing-aid salespersons than audiologists. A small decrease is expected in State and local government educational services as schools outsource more of the work these services involve to other industries.
29-1122	Occupational therapists	As the population ages, demand for occupational therapy services is expected to increase. This is projected to lead to small increases in general medical and surgical hospitals, in offices of physical, occupational and speech therapists, and audiologists and a moderate increase in nursing care facilities.
29-1123	Physical therapists	As the population ages, demand for physical therapy services is expected to grow, leading to small increases in general medical and surgical hospitals and in nursing care facilities.
29-1124	Radiation therapists	A small increase is expected in general medical and surgical hospitals as they hire more radiation therapists to meet the growing demand for radiation therapy services.
29-1125	Recreational therapists	Small to moderate decreases are expected across all industries as cost-containment pressures limit the provision of recreational therapy services.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
29-1126	Respiratory therapists	As the population ages, demand for respiratory therapy services is expected to grow. This is projected to lead to moderate increases in specialty (except psychiatric and substance abuse) hospitals and small increases in general medical and surgical hospitals and in State and local government hospitals. Moderate increases in the consumer goods rental industry are expected because of the increase in respiratory therapy services related to the rental of oxygen equipment.
29-1127	Speech-language pathologists	A moderate decrease is expected in offices of physical, occupational and speech therapists, and audiologists as the portion of the industry employing speech-language pathologists is expected to grow more slowly than other sectors of the industry.
29-1131	Veterinarians	Small decreases are expected across all industries because the growth in employment of licensed veterinarians will be limited as a result of the limited capacity of veterinary schools.
29-2011	Medical and clinical laboratory technologists	As hospitals and physicians' offices continue to outsource laboratory services to medical and diagnostic laboratories, small decreases are expected in general medical and surgical hospitals and in offices of physicians, and a moderate increase is expected in medical and diagnostic laboratories.
29-2021	Dental hygienists	A small increase is projected in offices of dentists as dentists continue to delegate more work to dental hygienists.
29-2031	Cardiovascular technologists and technicians	A moderate increase is expected in general medical and surgical hospitals as the aging population, as well as advances in diagnosing cardiovascular disease, increase the demand for cardiovascular technologist and technician services.
29-2032	Diagnostic medical sonographers	Small increases are expected across all industries as advances in diagnostic testing increase demand for these workers.
29-2034	Radiologic technologists and technicians	A small increase is expected in State and local government hospitals as the aging population increases demand for these workers.
29-2041	Emergency medical technicians and paramedics	A small increase is expected in local government, excluding education and hospitals, as governments utilize fewer volunteer workers and hire more paid workers.
29-2052	Pharmacy technicians	A very large increase is projected in grocery stores, and large increases are projected in department stores, and in other general merchandise stores as more of all these types of stores add pharmacies. A large increase is projected in drugs and druggists' sundries merchant wholesalers as more people buy drugs at the wholesale level. A large increase also is projected in electronic shopping and mail-order houses as more people buy drugs through the Internet. A small increase is projected in general medical and surgical hospitals as pharmacists become more involved in patient care, causing technicians to take on more routine tasks. A small increase also is projected in all other health and personal care stores because pharmacy technicians will increasingly take on more routine pharmacy tasks, such as counting pills.
29-2054	Respiratory therapy technicians	Small decreases are projected across all industries. As respiratory therapists become more involved in patient care, demand for respiratory therapy technicians is expected to decline.
29-2055	Surgical technologists	Small increases are expected in general medical and surgical hospitals and in offices of physicians as surgical technologists replace nurses during surgery.

**Table V–3. Factors changing occupational utilization, 2004–14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
29-2061	Licensed practical and licensed vocational nurses	Small to moderate decreases are expected in general medical and surgical hospitals, offices of physicians, State and local government hospitals, and all other outpatient care centers as demand for the services of registered nurses, instead of licensed practical and licensed vocational nurses, increases, and as nursing aides increasingly perform many of the duties of these workers. Small decreases also are expected in community care facilities for the elderly and in residential mental retardation facilities as home health aides increasingly perform many of the duties of these workers.
29-2071	Medical records and health information technicians	Small increases are expected in offices of physicians as they increasingly hire and utilize these workers to help physicians' offices comply with new medical records legislation. Small increases also are expected in accounting, tax preparation, bookkeeping, and payroll services as the number of firms that specialize in medical coding increases.
29-9091	Athletic trainers	Small increases are projected in all industries except public and private educational services as athletic trainers are used as a cost-effective alternative to other health care professionals.
31-1011	Home health aides	Moderate increases are expected in community care facilities for the elderly and in residential mental retardation facilities as home health aides increasingly perform the duties of other workers, such as licensed practical nurses, in these industries.
31-1012	Nursing aides, orderlies, and attendants	Small increases are expected in general medical and surgical hospitals, State and local government hospitals, and offices of physicians as these workers increasingly perform some of the duties of licensed practical nurses. Small decreases are expected in community care facilities for the elderly and in residential mental retardation facilities as some of the duties of these workers are taken over by home health aides.
31-2011	Occupational therapist assistants	Small increases are projected in nursing care facilities, in offices of physical, occupational and speech therapists, and audiologists. As the population ages, demand for occupational therapy services is expected to increase, and occupational therapists will delegate more responsibility to occupational therapist assistants in order to contain costs.
31-2021	Physical therapist assistants	As the population ages and demand for physical therapy services increases, a moderate increase is expected in general medical and surgical hospitals, and small increases are expected in offices of physical, occupational and speech therapists, and audiologists and in nursing care facilities.
31-9091	Dental assistants	A small increase is projected in the offices of dentists as dentists continue to delegate more work to dental assistants.
31-9092	Medical assistants	A small increase is expected in offices of physicians, and a large increase is expected in general medical and surgical hospitals, as medical facilities continue to utilize medical assistants to contain costs.
31-9094	Medical transcriptionists	A small decrease is expected in general medical and surgical hospitals and in offices of physicians as transcription work is outsourced overseas and speech-recognition technology allows for the nearly real-time dissemination of medical reports and charts.
31-9095	Pharmacy aides	A moderate increase is projected in grocery stores as more stores add pharmacies.
31-9096	Veterinary assistants and laboratory animal caretakers	Small decreases are expected across all industries as more skilled veterinary technicians and technologists become the preferred form of help for veterinarians.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
33-1011	First-line supervisors/managers of correctional officers	A small increase is expected in Federal Government, excluding postal service, as a result of the growing Federal prison population.
33-1021	First-line supervisors/managers of fire fighting and prevention workers	A small increase is expected in local government, excluding education and hospitals, as increasing concentrations of population result in more volunteer fire fighting positions being converted to paid positions.
33-2011	Fire fighters	A small increase is expected in local government, excluding education and hospitals, as increasing concentrations of population result in more volunteer fire fighting positions being converted to paid positions.
33-3012	Correctional officers and jailers	A small decrease is expected in State government, excluding education and hospitals, as States try to reduce prison populations by repealing mandatory minimum sentencing laws and sending offenders to rehabilitation. A small increase is expected in the Federal Government, excluding postal service, as a result of the growing prison population.
33-3021	Detectives and criminal investigators	A moderate increase is projected in the Federal Government, excluding postal service, as more detectives and criminal investigators are hired to meet increased intelligence and security needs.
33-3051	Police and sheriff's patrol officers	A moderate increase is projected in the Federal Government, excluding postal service, as more border patrol agents are hired to meet increased security needs along the U.S. border.
33-9032	Security guards	Moderate decreases are expected in all industries except for investigation, guard, and armored car services as security guards are outsourced to that industry from others.
35-1012	First-line supervisors/managers of food preparation and serving workers	Small declines are expected in State and local government educational services, all other traveler accommodation, and nursing care facilities as organizations in these industries increasingly outsource their food services to firms in other industries.
35-2012	Cooks, institution and cafeteria	As cafeterias increasingly outsource their food preparation operations to firms in the special food services industry, a small increase is expected in that industry, and moderate decreases are expected in all other industries.
35-2014	Cooks, restaurant	Fewer restaurant cooks, whose skills of preparing complex meals cooked to order, will be needed in limited-service eating places, resulting in a small decrease. A small decrease is also expected in all other traveler accommodation because many hotels either are eliminating or contracting out their food service operations. A small decrease is expected in the all other amusement and recreation as food preparation or other service workers increasingly are used for cooking duties.
35-2015	Cooks, short order	A small decrease is projected in full-service restaurants because of the shift toward more complex food preparation in this industry.
35-2019	Cooks, all other	A small decrease in all industries is projected. As restaurant kitchens become more highly organized and routines more structured, fewer of these cooks will be needed, as opposed to those who perform the specific cooking roles required by the type of kitchen (for example, full-service, limited-service, or cafeteria meals).

**Table V–3. Factors changing occupational utilization, 2004–14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
35-2021	Food preparation workers	A small increase is expected in full-service restaurants as casual family-dining establishments, which rely heavily on these workers, occupy an increasingly larger share of the industry. A small increase is expected in special food services as organizations from other industries outsource their food preparation services to that industry. Small decreases are expected in State and local government educational services, nursing care facilities, general medical and surgical hospitals, and community care facilities for the elderly as organizations in these industries outsource their food preparation services to other industries. A small decrease is expected in religious organizations as more volunteers are used in place of paid employees.
35-3011	Bartenders	Small decreases are expected in fitness and recreational sports centers, special food services, and limited-service eating places as organizations in these industries reduce their alcohol-related services.
35-3021	Combined food preparation and serving workers, including fast food	Small decreases are expected in full-service restaurants and in special food services because the employment of food preparation and service workers are not projected to grow as quickly as the employment of restaurant cooks. A small increase is expected in gasoline stations as more gasoline stations add fast food restaurants.
35-3022	Counter attendants, cafeteria, food concession, and coffee shop	A moderate increase is projected in the motion picture and video exhibition industry as movie theaters expand their concessions operations. A small decrease is projected in full service restaurants because the employment of counter attendants is not expected to grow as rapidly as the employment of other workers in this industry, such as chefs and cooks.
35-3031	Waiters and waitresses	A small decrease is expected in the all other traveler accommodation industry as lodging establishments increasingly outsource their food and dining services to other industries. A small decrease also is expected in limited-service eating places as these organizations place a larger emphasis on quick service.
35-3041	Food servers, nonrestaurant	A small decrease is expected in all industries as food service operations become more casual and more routinely contracted out.
35-9031	Hosts and hostesses, restaurant, lounge, and coffee shop	A small decrease is expected in the all other traveler accommodation industry as lodging establishments continue to outsource their food and dining operations to other industries. A small decrease also is expected in limited-service eating places as these establishments place a larger emphasis on quick service.
37-1012	First-line supervisors/managers of landscaping, lawn service, and groundskeeping workers	A small decrease is projected in landscaping services as these establishments employ more workers per manager.
37-3011	Landscaping and groundskeeping workers	A small increase is projected in employment services as other establishments look to industry for landscaping and groundskeeping services to minimize the cost of retaining these employees full time.
39-1011	Gaming supervisors	A small increase in local government is expected as growth in Indian casino employment outpaces other local government growth.
39-1012	Slot key persons	A small increase in local government is expected as growth in Indian casino employment outpaces other local government growth.
39-2011	Animal trainers	Small increases are projected in all industries as pet owners are willing to spend more money on their pets—particularly on professional obedience training for dogs.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
39-3011	Gaming dealers	A moderate increase in local government is expected as growth in Indian casino employment outpaces other local government growth.
39-3012	Gaming and sports book writers and runners	A small decrease is expected in gambling industries because most States do not have legalized sports gambling, limiting growth opportunities.
39-3019	Gaming service workers, all other	A small increase in local government is expected as growth in Indian casino employment outpaces other local government growth.
39-3021	Motion picture projectionists	Moderate decreases are projected in all industries as the result of improvements in technology that reduce the amount of work necessary to show a film.
39-5092	Manicurists and pedicurists	A small increase is projected in personal care services as demand for manicures and pedicures grows faster than demand for other personal care services.
39-5094	Skin care specialists	A small increase is projected in personal care services as demand for skin care services grows faster than demand for other personal care services.
39-9011	Child care workers	A small increase is expected in State and local government educational services as more States offer public preschool programs for young children.
39-9021	Personal and home care aides	A small increase is expected in private households and services for the elderly and for persons with disabilities as a growing elderly population demands more adult day care and help with household chores and errands.
39-9031	Fitness trainers and aerobics instructors	A very large increase in general medical and surgical hospitals is expected as more fitness centers are established in hospitals.
41-1011	First-line supervisors/managers of retail sales workers	Small decreases are projected for all industries because Internet sales, e-commerce, and automated buying and ordering systems are expected to reduce the need for supervisors, partly because of fewer sales personnel to supervise and partly because these technological developments tend to reduce the need for the managerial functions these workers perform.
41-1012	First-line supervisors/managers of non-retail sales workers	Small decreases are projected for all industries because Internet sales, e-commerce, and automated buying and ordering systems are expected to reduce the need for supervisors, partly because of fewer sales personnel to supervise and partly because these technological developments tend to reduce the need for the managerial functions these workers perform.
41-2011	Cashiers, except gaming	A moderate decrease is expected in grocery stores, and small decreases are expected in department stores, building materials and supplies stores, and other general merchandise stores, as the use of self-checkout lanes in grocery stores increases.
41-2012	Gaming change persons and booth cashiers	With the increasing use of coinless slot machines, automatic coin redemption, and ATMs, small decreases are expected in casino hotels and gambling industries.
41-2021	Counter and rental clerks	Small increases are projected in all industries as businesses strive to provide better service to their customers.
41-2022	Parts salespersons	Moderate decreases are projected in all industries as electronic commerce ordering and reordering systems and collaborative planning, forecasting, and replenishment replace these workers.
41-3021	Insurance sales agents	Small decreases are projected in all industries as establishments increasingly rely on independent agents or direct marketing.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
41-3031	Securities, commodities, and financial services sales agents	A small decrease is expected in the securities and commodities contract intermediation and brokerage industry as the industry becomes more automated. A small increase is expected in depository credit intermediation as these establishments begin to offer a wider variety of financial products following deregulation in the industry.
41-3041	Travel agents	A small decrease is projected in all other travel and reservation services because the segment of the industry in which travel agents are employed is projected to grow more slowly than the other segments of the industry. A moderate decrease is expected in all other industries except for travel agencies, because of the increasing use of the Internet to book travel arrangements.
41-9041	Telemarketers	Moderate decreases are projected in all industries as more people are given the opportunity to opt out of receiving calls from telemarketers because of do-not-call lists, -technological innovations such as caller id and devices that block telemarketing calls, and more jobs being outsourced overseas.
43-2011	Switchboard operators, including answering service	Moderate declines are expected in all industries because of the increasing automation of switchboards.
43-2021	Telephone operators	Large declines are projected in all industries as automation reduces demand for telephone operators.
43-2099	All other communications equipment operators	Moderate declines are projected in all industries as automation reduces demand for these workers.
43-3011	Bill and account collectors	A moderate increase is expected in collection agencies and other business support services because more debt collection is being outsourced to collection agencies. A small decrease in employment services is expected because the payment practices of bill and account collectors make the use of temporary workers less likely.
43-3021	Billing and posting clerks and machine operators	Moderate declines are expected in most industries as automation simplifies the billing process. However, because of the complicated nature of medical billing, smaller decreases are expected in general medical and surgical hospitals, State and local government hospitals, and accounting, tax preparation, and payroll services. A moderate decrease is expected in employment services as increasing options for contracting out billing services reduces the need for temporary help.
43-3031	Bookkeeping, accounting, and auditing clerks	Small decreases are projected in all industries as improvements in technology simplify accounting processes and some jobs get outsourced overseas.
43-3041	Gaming cage workers	Small decreases are projected in gambling industries and casino hotels as advances in technology, such as coinless slot machines and ATMs in casinos, reduce the demand for workers to handle the cage and perform credit checks.
43-3061	Procurement clerks	Small to moderate decreases are expected in all industries as electronic commerce and the automation of recordkeeping and ordering processing reduces the demand for procurement clerks.
43-4021	Correspondence clerks	Moderate decreases are projected in all industries because of productivity gains from the electronic handling of accounts and correspondence and the overseas outsourcing of some jobs.
43-4031	Court, municipal, and license clerks	Small increases are expected in all industries because of the increasing number of court cases.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
43-4041	Credit authorizers, checkers, and clerks	Very large decreases are projected across all industries as credit checking becomes almost exclusively automated, with new software that quickly analyzes a person's credit history.
43-4051	Customer service representatives	Small increases are expected across most industries as firms put more emphasis on improving the quality of their customer service. A moderate increase is expected in depository credit intermediation as banks put more emphasis on marketing and customer service.
43-4061	Eligibility interviewers, government programs	Moderate decreases are projected in all industries as government programs, such as welfare, continue to be reformed and the role of the government is decreased.
43-4071	File clerks	Very large decreases are expected across all industries because of the increasing automation and consolidation of recordkeeping functions.
43-4111	Interviewers, except eligibility and loan	A small increase is projected in general medical and surgical hospitals as the Nation's population ages and admitting clerks take on more responsibility.
43-4131	Loan interviewers and clerks	Small decreases are expected across all industries as the process of applying for and determining one's eligibility for a loan becomes increasingly automated and as simpler credit-scoring systems further reduce the need for personal follow-ups.
43-4151	Order clerks	Large decreases are expected in all industries except electronic shopping and mail-order houses as electronic commerce continues to expand, affecting all transactions between consumers, business, and government and thereby reducing the need for order clerks.
43-4181	Reservation and transportation ticket agents and travel clerks	A moderate decrease is projected in scheduled air transportation as the use of electronic ticketing and the Internet increases.
43-4199	Information and record clerks, all other	Moderate decreases across all industries are projected as clerical functions become more automated, enabling existing workers to be more productive.
43-5011	Cargo and freight agents	A moderate decrease is expected in all industries because of increasing automation and advances in technology that allow shipments to be electronically instead of manually tracked by a cargo or freight agent.
43-5021	Couriers and messengers	Although many legal documents and parcels must still be sent by messenger, employment in legal services and in depository credit intermediation is expected to continue to be adversely affected by the more widespread use of electronic information systems, leading to moderate decreases.
43-5032	Dispatchers, except police, fire, and ambulance	Small decreases are expected in all industries because of the increasing use of automated dispatching devices, such as computers and global positioning systems, that make the dispatching function more efficient.
43-5041	Meter readers, utilities	Very large decreases across all industries are expected because of the increasing use of remote meter reading technology that eliminates the function of this occupation.
43-5071	Shipping, receiving, and traffic clerks	Small decreases are expected in all industries as automation and the growing use of hand-held scanners and personal computers in shipping and receiving departments increase the productivity of these workers.
43-5081	Stock clerks and order fillers	Moderate decreases are projected in all industries because of the use of computers for inventory control and the installation of automated order equipment that increases the efficiency of making up orders.
43-5111	Weighers, measurers, checkers, and samplers, recordkeeping	Moderate decreases are expected in all industries because of the increasing use of automated equipment that performs the functions of this occupation.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
43-6011	Executive secretaries and administrative assistants	Small decreases are projected across all industries as office automation continues to simplify the tasks performed by these workers.
43-6013	Medical secretaries	Small declines are projected in all industries as improvements in technology allow each medical secretary to support a larger number of workers.
43-6014	Secretaries, except legal, medical, and executive	Moderate declines are expected in all industries as improvements in technology allow each secretary to support a larger number of workers.
43-9011	Computer operators	Very large decreases are expected across all industries because of the automation of systems and a shift in computer operation duties to other workers.
43-9021	Data entry keyers	Moderate declines are projected in all industries as the spread of computer technology allows most data to be entered by other workers and because of the overseas outsourcing of data entry work.
43-9022	Word processors and typists	Large declines are expected in all industries as technology allows word processing and typing tasks to be performed by other workers.
43-9031	Desktop publishers	A small increase is projected in all industries as technology continues to simplify the process of producing publication-ready material.
43-9041	Insurance claims and policy processing clerks	Small decreases are expected across all industries as computer technology boosts productivity and because of the overseas outsourcing of work.
43-9051	Mail clerks and mail machine operators, except postal service	Very large decreases are expected across all industries as more communications are sent electronically, decreasing the demand for these workers.
43-9071	Office machine operators, except computer	Large decreases are projected across all industries because of increasing productivity and easier-to-use technology that are expected to decrease demand for these workers.
43-9081	Proofreaders and copy markers	Small declines are expected across all industries as the use of spell-check and bank processing software and the increased outsourcing of this work reduces demand for these workers.
43-9111	Statistical assistants	Small decreases are expected across all industries as employers substitute workers with broader skills and as more powerful statistical software reduces the need for statistical assistants.
43-9199	Office and administrative support workers, all other	A small decrease is projected in all industries as improving technology simplifies the tasks performed by these workers.
45-1000	Supervisors, farming, fishing, and forestry workers	Small increases are expected in crop and animal production as more farmland comes under the control of managers instead of self-employed workers.
45-2093	Farmworkers, farm and ranch animals	A small decrease is expected in crop production because of consolidation of farms.
45-4021	Fallers	A small decrease is projected in logging as continued mechanization and use of large-scale cutting practices are expected to lower demand for this occupation.
45-4022	Logging equipment operators	A small increase is expected in logging as use of complex machinery increases.
47-2011	Boilermakers	A small decrease is expected in plumbing, heating, and air-conditioning contractors and electrical contractors as fewer boilers are installed and because the work on newer boilers can often be done by workers in other occupations, such as plumbers.
47-2041	Carpet installers	A small decrease is projected in home furnishings stores as flooring products other than carpet increase in popularity.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
47-2044	Tile and marble setters	Small increases are expected in all industries as tile gains popularity relative to other building materials in both homes and nonresidential buildings.
47-2061	Construction laborers	A small increase is projected in employment services because specialization within construction allows employment services to increase the number of laborers employed to meet short-term construction labor needs.
47-2111	Electricians	A moderate decline is expected in employment services because electricians are more likely to be employed directly by contractors.
47-2131	Insulation workers, floor, ceiling, and wall	With the increasing use of products that can be installed by noninsulation workers, small decreases are expected in all industries, except for drywall and insulation contractors.
47-2142	Paperhangers	Small decreases are projected in all industries as more people choose paint instead of wallpaper and because much of this work can be done by painters.
47-2151	Pipelayers	A small decrease is expected in local government as local budget constraints cause shifts in funding and employment to more pressing areas, such as road repair and replacement.
47-2171	Reinforcing iron and rebar workers	A small decrease is projected in plumbing, heating, and air-conditioning contractors as other workers in the industry become more able to perform the tasks traditionally done by these workers.
47-3013	Helpers—Electricians	Small decreases are expected across all industries as demand shifts toward electricians and away from helpers.
47-3019	All other helpers, construction trades	A small decrease is expected in employment services, and moderate decreases are expected across all other industries, as demand shifts away from helpers toward more specialized skilled labor.
47-4011	Construction and building inspectors	Small increases are projected in engineering services as more highly detailed inspections are demanded by consumers and by building codes.
47-4051	Highway maintenance workers	Small increases in State and local government are expected as road repairs become an increasing priority.
47-4099	Construction and related workers, all other	Small decreases are expected across all industries as demand shifts toward more specialized construction workers.
47-5041	Continuous mining machine operators	A small increase is projected in coal mining as growing automation leads to an increased proportion of equipment operators.
47-5042	Mine cutting and channeling machine operators	A small increase is expected in coal mining because increasing automation will require more of these operators.
47-5051	Rock splitters, quarry	A small increase is expected in coal mining because increasing automation will require more of these workers.
47-5061	Roof bolters, mining	A small decrease is projected in coal mining as increased mechanization and a shift toward mining Western coal fields are expected to cause roof bolters to become a smaller proportion of industry employment.
49-2011	Computer, automated teller, and office machine repairers	Small decreases are expected in most industries as a result of more reliable computers, automated teller machines, and other office equipment.
49-2021	Radio mechanics	Small decreases are projected in all industries as the reliability of equipment improves and as equipment is replaced rather than repaired.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
49-2091	Avionics technicians	A small increase is expected in aerospace product and parts manufacturing firms as they increasingly perform repairs. A small decrease is expected in scheduled air transportation and the Federal Government, excluding postal service, as these industries increasingly outsource repair work.
49-2092	Electric motor, power tool, and related repairers	Small decreases are expected in most industries because of improvements in electrical motor design that make motors more reliable and easier to repair.
49-2097	Electronic home entertainment equipment installers and repairers	Small decreases are projected in all industries because of increased reliability and decreasing prices of electronic home equipment, making it more efficient to replace products than to repair them.
49-2098	Security and fire alarm systems installers	A moderate decrease is expected in firms that provide investigation, guard, and armored car services as these firms increasingly outsource security and fire alarm installation.
49-3011	Aircraft mechanics and service technicians	A small increase is expected in support activities for air transportation as services are contracted into this industry. A moderate increase is expected in aerospace product and parts manufacturing firms as they increasingly perform repairs. Small decreases are expected in scheduled and nonscheduled air transportation and in the Federal government, excluding postal service, as repair work is increasingly outsourced.
49-3021	Automotive body and related repairers	A small decrease is projected in automobile dealers because many dealers are beginning to outsource their body repair work as improvements in the technology of automobiles makes body repair more specialized.
49-3093	Tire repairers and changers	A small decrease is expected in all industries except rubber product manufacturing as the reliability of tires increases.
49-9021	Heating, air conditioning, and refrigeration mechanics and installers	A small increase is projected in plumbing, heating, and air conditioning contractors as more people move south and west.
49-9031	Home appliance repairers	A moderate decrease is expected in department stores and all other electronics and appliance stores as these firms scale back their repair services. A small increase is expected in personal and household goods repair and maintenance because of increased outsourcing to this industry.
49-9061	Camera and photographic equipment repairers	Moderate decreases are projected in all industries as digital camera technology improves, as the prices of new cameras fall, leading to replacement rather than repair, and because of the use of disposable cameras.
49-9064	Watch repairers	A small decrease is expected in all industries because most watches are not worth repairing.
49-9091	Coin, vending, and amusement machine servicers and repairers	A small decline is projected in all industries because cashless vending machines and electronic notification of low inventory are expected to result in less need for servicing. Also, as these machines become more computerized and less mechanical, fewer repairs will be needed.
49-9095	Manufactured building and mobile home installers	Small declines are projected in all industries because low interest rates and favorable policies are expected to lead to fewer manufactured homes installed relative to standard housing, reducing demand for installers.
51-2021	Coil winders, tapers, and finishers	Moderate decreases are projected in all industries as other technologies replace coils and as more productive equipment is introduced.
51-2023	Electromechanical equipment assemblers	Small decreases are anticipated in all industries as more productive equipment and manufacturing processes are used and because of the replacement of electromechanical equipment with electronic devices.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
51-2099	All other assemblers and fabricators	A small decrease is expected in all occupations because of productivity improvements.
51-3021	Butchers and meat cutters	A small decrease is projected in all industries as a growing share of meat is being cut and prepackaged at the manufacturing level.
51-3093	Food cooking machine operators and tenders	A small decrease in all industries because of the increasingly productive machinery used.
51-4021	Extruding and drawing machine setters, operators, and tenders, metal and plastic	Moderate decreases are expected in most industries as more productive equipment and manufacturing processes are used.
51-4022	Forging machine setters, operators, and tenders, metal and plastic	Small decreases are projected in all industries as more productive equipment and manufacturing processes are used.
51-4031	Cutting, punching, and press machine setters, operators, and tenders, metal and plastic	Moderate decreases are expected in all industries as technology and manufacturing techniques improve.
51-4032	Drilling and boring machine tool setters, operators, and tenders, metal and plastic	Small decreases are projected in all industries as improvements in autoloaders and multi-axis machines improve productivity.
51-4033	Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic	A small decrease is expected in all industries because of productivity gains from improvements in technology.
51-4034	Lathe and turning machine tool setters, operators, and tenders, metal and plastic	A small decrease is projected in all industries because of productivity gains from improvements in autoloaders and automated lathes.
51-4035	Milling and planing machine setters, operators, and tenders, metal and plastic	A small decrease is expected in all industries because of productivity gains from improvements in technology.
51-4061	Model makers, metal and plastic	A small decrease is projected in all industries because of computer aided design prototyping and manufacturing software and machines.
51-4072	Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic	Small decreases are expected in all industries as more productive equipment and manufacturing processes are used.
51-4192	Layout workers, metal and plastic	A small decrease is projected in most industries because of improved techniques and automation.
51-4193	Plating and coating machine setters, operators, and tenders, metal and plastic	A small decrease is expected in all industries because of productivity gains from improvements in technology.
51-4194	Tool grinders, filers, and sharpeners	Small decreases are expected in all industries because of the increasing use of replaceable cutting tools.
51-4199	All other metal workers and plastic workers	Moderate decreases are projected in all industries as more productive equipment and manufacturing processes are used.
51-5011	Bindery workers	A moderate decrease is expected in firms that provide printing and related support activities as these firms increasingly outsource bindery work overseas. A small decrease is expected in newspaper publishers as a result of increasing automation.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
51-5022	Prepress technicians and workers	A small decrease is projected printing and related support activities, newspaper publishers, and all other newspaper, periodical, book and directory publishers because of the use of new software and digitized processes.
51-6031	Sewing machine operators	A moderate decrease is expected in cut and sew apparel manufacturing, apparel accessories and other apparel manufacturing, and apparel knitting mills as firms increasingly outsource production overseas.
51-6041	Shoe and leather workers and repairers	A moderate decrease is projected in all industries except footwear manufacturing and other leather and allied product manufacturing as people increasingly prefer to buy relatively cheap new shoes instead of repairing old shoes.
51-6042	Shoe machine operators and tenders	Moderate decreases are projected in all industries as more productive equipment and manufacturing processes are used.
51-6061	Textile bleaching and dyeing machine operators and tenders	Moderate decreases are projected in all industries because of more efficient equipment introduced so that domestic firms can remain competitive with foreign firms.
51-6062	Textile cutting machine setters, operators, and tenders	Moderate decreases are projected in all industries because of more efficient equipment introduced so that domestic firms can remain competitive with foreign firms.
51-6063	Textile knitting and weaving machine setters, operators, and tenders	Moderate decreases are projected in all industries because of more efficient equipment introduced so that domestic firms can remain competitive with foreign firms.
51-6064	Textile winding, twisting, and drawing out machine setters, operators, and tenders	Moderate decreases are projected in all industries because of more efficient equipment introduced so that domestic firms can remain competitive with foreign firms.
51-6091	Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers	Moderate decreases are projected in all industries because of more efficient equipment introduced so that domestic firms can remain competitive with foreign firms.
51-6093	Upholsterers	A moderate decrease is expected in most industries as new furniture and automotive seats use more durable coverings and as manufacturing firms continue to become more automated and efficient. A small decrease is expected in personal and household repair and maintenance as it becomes more cost effective to replace, rather than reupholster furniture.
51-6099	All other textile, apparel, and furnishings workers	Moderate decreases are projected in all industries because of more efficient equipment introduced to remain competitive with imported fabrics and apparel.
51-7021	Furniture finishers	Large decreases are projected in household and institutional furniture manufacturing, wood kitchen cabinet and countertop manufacturing, and office furniture manufacturing as parts of the manufacturing process are outsourced overseas.
51-7041	Sawing machine setters, operators, and tenders, wood	Small decreases are expected in all industries because of more productive and higher capacity machinery.
51-7042	Woodworking machine setters, operators, and tenders, except sawing	A moderate decrease is projected in all industries because of overseas outsourcing and labor-saving technology.
51-7099	All other woodworkers	A moderate decrease is projected in all industries because of overseas outsourcing and labor-saving technology.
51-8012	Power distributors and dispatchers	A small decrease is expected in local government, excluding education and hospitals, because few new power plants are expected to be constructed in this industry.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
51-8013	Power plant operators	A small decrease is expected in local government, excluding education and hospitals, because few new power plants are likely to be constructed in this industry.
51-8021	Stationary engineers and boiler operators	Although commercial and industrial development will increase the number of systems to monitor and maintain, a small decrease is expected in most industries because increased automation will boost worker productivity.
51-8031	Water and liquid waste treatment plant and system operators	A small increase is projected in water, sewage, and other systems as Federal guidelines on operator certification cause many existing and new small communities to contract out plant operations to firms in this sector.
51-8092	Gas plant operators	Moderate increases are projected in natural-gas distribution, transportation and warehousing and in electric power generation, transmission, and distribution as automation decreases the need for other workers in these industries. There is usually only one plant operator per facility, so it is not often possible to eliminate gas plant operators.
51-9022	Grinding and polishing workers, hand	A small decrease is expected in all industries because of increased productivity.
51-9032	Cutting and slicing machine setters, operators, and tenders	A small decrease is projected in all industries because of productivity gains from improvements in technology.
51-9061	Inspectors, testers, sorters, samplers, and weighers	Small decreases are projected in all industries because of increases in automated inspection technology and quality control efforts.
51-9071	Jewelers and precious stone and metal workers	A small increase is expected in jewelry, luggage, and leather goods stores as more customers demand customized jewelry.
51-9081	Dental laboratory technicians	A small decrease is projected in offices of dentists as dentists increasingly contract work out to dental laboratories.
51-9083	Ophthalmic laboratory technicians	Moderate decreases are projected in offices of optometrists and all other health and personal care stores because of increasing automation.
51-9111	Packaging and filling machine operators and tenders	A small decrease is expected in all industries because of improved machinery and processes.
51-9121	Coating, painting, and spraying machine setters, operators, and tenders	Small decreases are projected in all industries because of increasing automation.
51-9131	Photographic process workers	Moderate decreases are projected in all industries because of the increasing of digital photography and home photo processing.
51-9132	Photographic processing machine operators	Large to very large decreases are expected in all industries as digital technology makes it easier for individuals to print, copy, and alter photographs with the use of personal computers and equipment.
51-9191	Cementing and gluing machine operators and tenders	A small decrease is projected in all industries because of improved machinery and processes.
51-9192	Cleaning, washing, and metal pickling equipment operators and tenders	A small decrease is projected in all industries because of improved machinery and processes.
51-9193	Cooling and freezing equipment operators and tenders	A small decrease is projected in all industries because of improved machinery and processes.
51-9195	Molders, shapers, and casters, except metal and plastic	Small decreases are projected in most industries because of improvements in technology.

**Table V-3. Factors changing occupational utilization, 2004-14 — Continued**

<i>Matrix code</i>	<i>Matrix occupation title</i>	<i>Factors affecting occupational utilization</i>
51-9199	All other production workers	A moderate decrease is projected in all industries because of improved machinery and processes.
53-1011	Aircraft cargo handling supervisors	A small increase is expected in all industries as demand rises for the rapid movement of goods and products by air, both domestically and internationally.
53-1021	First-line supervisors/managers of helpers, laborers, and material movers, hand	A small decrease is expected in all industries because of the slow projected employment growth of the various material moving occupations that they manage.
53-2021	Air traffic controllers	A small increase is projected in the Federal Government because of an anticipated increase in commercial aircraft traffic.
53-3021	Bus drivers, transit and intercity	A small increase in urban transit systems is expected as a result of an anticipated increase in the use of buses because of their flexibility.
53-4021	Railroad brake, signal, and switch operators	Moderate decreases in all industries are expected because of the consolidation of duties with other occupations and improvements in technology.
53-4099	Rail transportation workers, all other	Large decreases are projected in rail transportation as duties of these workers are taken over by engineers and conductors.
53-6011	Bridge and lock tenders	A moderate decrease is expected in the Federal Government, excluding postal service, because of outsourcing.
53-6021	Parking lot attendants	A moderate decrease is projected in all industries because of automation that allows drivers to pay without the use of an attendant.
53-6031	Service station attendants	Small decreases are expected in most industries because of the continued shift to self-service.
53-7051	Industrial truck and tractor operators	Small decreases are expected in all industries because of the increased efficiency of equipment and processes and the growing use of automation in large facilities.
53-7061	Cleaners of vehicles and equipment	Small decreases are projected in all industries from technological improvements in cleaning equipment that raise productivity.
53-7062	Laborers and freight, stock, and material movers, hand	Small decreases are expected in all industries because of automation and advances in material-moving machinery and equipment.
53-7063	Machine feeders and offbearers	Moderate decreases are projected in all industries because of the automation of machine-tending tasks.
53-7071	Gas compressor and gas pumping station operators	Moderate decreases are expected in most industries because of the increasing automation of controls.
53-7072	Pump operators, except wellhead pumpers	Moderate decreases are projected in most industries because of increasing automation.
53-7073	Wellhead pumpers	Moderate decreases are projected in most industries because of increasing automation.
53-7111	Shuttle car operators	Moderate decreases are expected in all industries because of increased automation and productivity.
53-7121	Tank car, truck, and ship loaders	Moderate decreases are projected in all industries because of increasing automation and more productive processes.
53-7199	Material moving workers, all other	Moderate decreases are projected in all industries because of increasing automation and more productive material handling processes.

# Chapter VI. Estimating Occupational Replacement Needs

Information about projected job openings by occupation—openings resulting from employment growth or the need to replace workers who leave an occupation—has many important applications. For example, students and vocational counselors use this kind of information to make career choice decisions, planners of training programs use it to develop education policies, and personnel specialists use it to plan their recruiting efforts. The Bureau of Labor Statistics (BLS) has provided information on employment growth biennially through its Employment Projections program for more than 50 years. In 1992, the Bureau resumed estimating job openings resulting from replacement needs.

After completing a comprehensive research effort, BLS analysts concluded that two definitions and two estimates of separations were needed to provide appropriate information on replacement needs for different users. The first type of estimate, total separations, measures all individuals who leave their occupation. The second, net separations, measures the net movements of new and experienced workers into and out of occupations. Both measures of separations use data from the Current Population Survey (CPS). After developing historical total and net separation rates, the Bureau calculates projected total and net replacement rates in order to estimate future total and net replacement needs for each occupation in the National Employment Matrix.

## Concepts and definitions

During the past several decades, a variety of concepts has been used to calculate estimates of occupational replacement needs, a component of job openings. These different concepts result in significantly different estimates of separations for the same occupation that often have confused users of the information. This section briefly summarizes the concepts currently used by the Bureau to calculate replacement needs. Figure 1 illustrates the differences between total and net separations. For each age group, the figure shows total and net occupational entrants and separations between January 2003 and January 2004. Younger age groups exhibit an excess of total entrants over total separations as a larger number of young persons begin working in an occupation than leave it. This excess is referred to as net entrants. Likewise, the excess of total separations over total entrants in older age groups is referred to as net separations.

*Total separations.* Total separations identify the flow of individuals leaving an occupation for any reason, without regard to persons entering the occupation. Total separations are the larger measure of separations. During a given period,

individuals may leave an occupation for a variety of reasons. Some become employed in a different occupation as a result of a promotion; a desire to change careers; the loss of an existing job; or the need for a different job while attending school, while training, or while caring for one's family; or for some other reason. Others who leave an occupation stop working altogether because they retire, desire more time for leisure or for an extended vacation, assume family responsibilities, return to school, move out of a particular geographic area, become ill, or have some other reason for leaving. If employment in an occupation is to increase or remain the same, those individuals who left the occupation must be replaced. In this case, total occupational separations are the replacement needs. If employment is declining, however, occupational separations exceed replacement needs by the amount of the decline in employment, because some persons who leave the occupation are not replaced. (Individuals who change employers, but remain employed in the same occupation—the sum of which events often is referred to as “turnover”—are not included in counts of replacement needs, because job changes by these individuals have no impact on the number of openings for persons wishing to enter an occupation.)

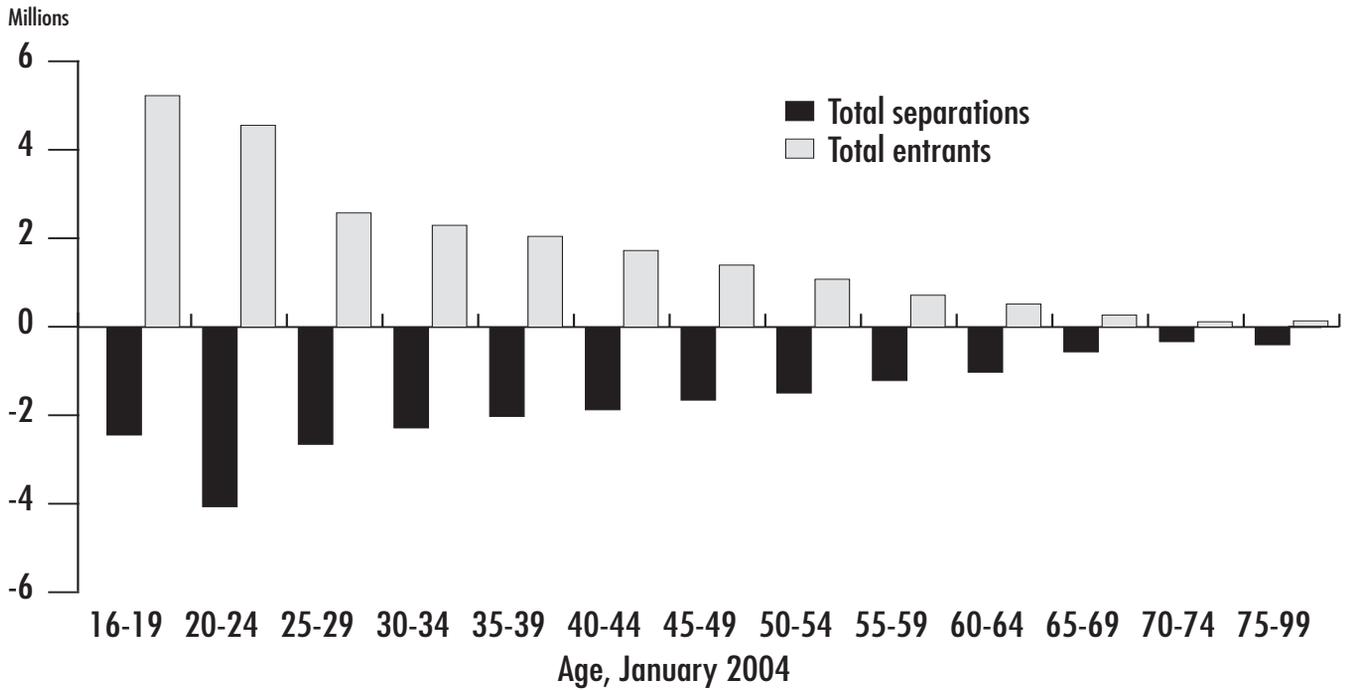
*Net separations.* Net separations summarize movements of workers into and out of an occupation over a specific period. If employment is not declining, net separations approximate the number of persons who permanently leave an occupation: net separations quantify the need for new entrants and, if training is required, identify minimum training requirements.

Employment data, by age, at two points in time are used to estimate net separations. For example, occupational employment, by age, is prepared for a base year and for 5 years later. Employment figures for each age group in the base year are then compared with employment figures for the group that is 5 years older. For instance, in a given occupation, employment in the base year for the 55- to 59-year-old group is compared with employment 5 years later for the 60- to 64-year-old group. If employment has increased from the base-year age group to the 5-year-older age group, then the increase measures net entrants into the occupation for the latter group, and net separations from the occupation for that age group are zero. If, instead, employment has declined from the base-year age group to the 5-year-older age group, the decline is recorded as net separations from that occupation for the latter group. The total net separations from the occupation in question are then the sum of the net separations from that occupation for all age groups.

**Figure 1. Total and net occupational entrants and separations, January 2003 to January 2004**

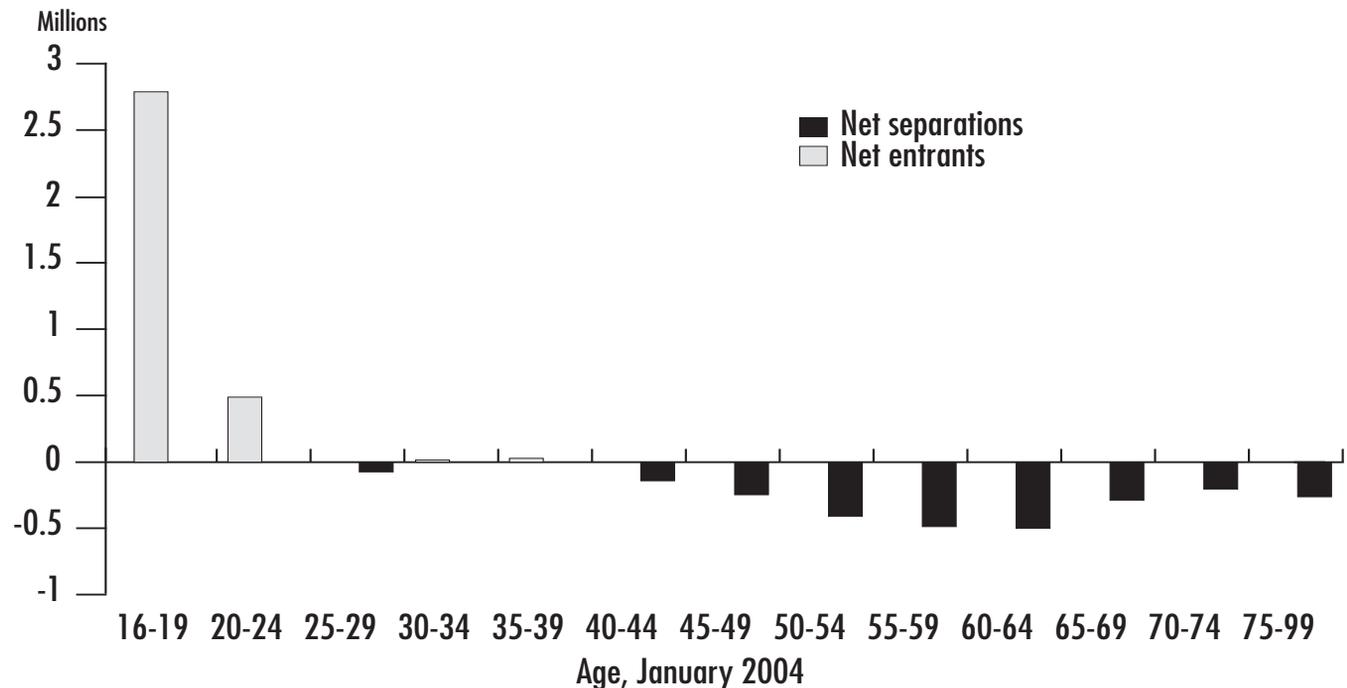
**Total separations:**

- Occur in all age groups
- Are independent of the total number of entrants
- Identify all of the normal movements out of occupations



**Net separations:**

- Occur only when total separations exceed total entrants within an age group
- For an occupation, are the sum of separations for each age group
- Exclude information about net entrants



It is important to note that, within any age group, to stop being included in employment data for a particular geographic area, individuals may have left the occupation in question and started working in another occupation, stopped working altogether, or left the area. Similarly, individuals entering an occupation in a geographic area may have been working in another occupation, may not have been working at all, or may have come from another area. The change, measured over the period in question, thus reveals only whether there were more or fewer entrants than separations and tells nothing about the total entrants, total separations, or any of their components. That is, the change indicates whether the size of the original age group increased or decreased, but it indicates nothing about the specific actions of individuals making up the group.

*Replacement needs.* In developing estimates of replacement needs, the distinction between that concept and separations must not be overlooked. When employment in an occupation remains the same or increases over a given period, replacement needs equal separations. When employment declines, replacement needs are less than separations because some individuals leaving an occupation are not replaced.

During a period when employment in an occupation declines, total separations will be greater than they would be if employment were increasing, because more individuals lose their jobs. Net separations would be greater not only because more individuals leave, but also because fewer enter, the occupation. A decline in employment represents individuals who left an occupation and were not replaced; therefore, replacement needs during a time of declining employment are determined by reducing observed separations by the decline in employment.

Although theoretically, employment could decline to zero, the possibility is remote, especially with national data. In such an unlikely scenario, separations would equal the previous number of employees, because all would have lost their jobs, and replacement needs would be zero (replacement needs = separations – employment decline = 0). During periods of employment decline, displaced workers are available to reenter the occupation later and thus may reduce the need to train additional workers.

### **Developing measures of total separations**

All individuals who leave an occupation—those who transfer to another occupation or who stop working for any reason—must be included in a measure of total separations. Producing such a measure requires longitudinal data that include information about individuals at two points in time. During the late 1970s, BLS researchers developed a procedure for using cps data to estimate the number of job openings arising from workers who leave their occupation between two points in time that are 1 year apart. Annual data are preferable to data with other periodicities because most data on the completion of training programs are compiled on an annual basis. Annual total separation data thus facilitate analyses of occupational supply and demand.

The method of measuring total separations entailed using computer records to track the same individuals in the cps over a 1-year period. Monthly data from August 2002 to July 2004 were assembled, and data for each of the first 12 months were matched to data for the same month 1 year later. For example, monthly data for a certain individual in August 2002 were matched with monthly data for the same individual in August 2003. The use of data from the matched sample permitted changes in an individual's employment status and occupation to be tabulated.

Over time, individuals may respond differently to the same cps question about their occupation, responses may be recorded differently by interviewers collecting the data, or recorded information may be interpreted and coded differently by persons preparing files for computer processing. All these actions result in a different occupation being recorded in the second year when, in fact, no change of occupation occurred. Data on January 2003–04 occupational transfers from the January 2004 cps supplement were used to rectify this overestimation of occupational transfers in matched cps data.

Combining 2003–04 matched cps data and occupational transfer data from the January 2004 cps supplement yields merged data that provide a composite description of movements into, out of, and between occupations over two points that are 1 year apart. The resulting merged data identify the numbers and types of separations and the characteristics of workers who change occupations, become unemployed, or leave the labor force.

Data on total separations for occupations with fewer than 50,000 employees were judged unreliable because of the limited number of observations in the sample. Data for the remaining occupations were examined individually, and if data identifying specific reasons for leaving the occupation appeared suspect, another detailed occupational group was selected to serve as a proxy and provide substitute data.

The cps is conducted primarily to obtain current data on the labor force status of individuals, rather than data that measure changes over time. As a result, there are significant limitations to the data that describe change. The cps is a household survey that collects data from persons living at specific addresses. One limitation to the matched sample is that information can be developed only from the responses of individuals who do not change their residence. Movers tend to change their labor force status more than do nonmovers; hence, the separation rates are biased downward because movers are not included. Separation rates also are biased downward because the cps excludes individuals who die between surveys.

By contrast, response and coding errors bias the separation rates upward. For example, if employed persons were incorrectly classified as not being in the labor force during the second survey, the matched data would indicate movement where none occurred. Although the net effect of the various biases on the movements is not known, their impacts appear to be offsetting and are not concentrated by occupation.

It must be emphasized that total separation rates developed from merged CPS data are not measured rates based on longitudinal data about individuals, but rather are a composite estimate of movements from occupations based on CPS data from two distinct sources. However, the rates are occupation specific and are extremely valuable for describing the labor market.

### Developing measures of net separations<sup>1</sup>

Changes in age groups over a 5-year period provide a comprehensive measure of occupation-specific net separations. When the size of a group increases, a measure of net entrants is recorded; when the group's size declines, net separations are identified. Net changes in an age group capture the net effect of transfers into and out of occupations, immigration, and emigration, as well as labor force entries and separations, including deaths. A 5-year period was chosen to reduce the impact of cyclical variations that might affect comparisons made over a shorter period. Estimates for other periods can be developed, however. Estimates also can be developed for industry, educational level, sex, and a variety of other demographic variables.

This new "cohort" technique thus becomes a powerful tool for analyzing labor market changes.

Employment estimates for appropriate age groups, by occupation, were developed for 1993–98, 1994–99, 1995–2000, 1996–2001, and 1997–2002. Initially, several hundred thousand records containing information on occupation, age, and many other characteristics for all employed persons in 1993 were combined, and occupational employment by age group was tabulated. The process was repeated to obtain estimates for desired age groups in 1998. To increase the sample size and reduce cyclical fluctuations, estimates for the age groups for which 1993 employment was tabulated also were developed for 1994, 1995, 1996, and 1997, and estimates for the age groups used in 1998 were developed for 1999, 2000, 2001, and 2002. Data on employment by occupation, by age group, were then averaged and used to prepare the estimates presented in this chapter. To simplify the presentation, all references to 1997 data represent averages for 1993, 1994,

**Table VI-1. Net separations for registered nurses and for waiters and waitresses, by age group, 1997–2002**

(Numbers in thousands)

1997 employment <sup>1</sup>		2002 employment <sup>2</sup>		Net change, 1997–2002	Net separations, 1997–2002	Separation rate, 1997–2002 (percent)
Age	Number	Age	Number			
<b>Registered nurses</b>						
16–99.....	1,971	—	2,145	174	151	7.7
16–19.....	1	16–20	1	1	0	.0
20–24.....	67	21–24	57	56	0	.0
25–29.....	202	25–29	204	137	0	.0
30–34.....	286	30–34	257	55	0	.0
35–39.....	368	35–39	324	38	0	.0
40–44.....	385	40–44	406	38	0	.0
45–49.....	277	45–49	371	–14	14	3.7
50–54.....	182	50–54	254	–23	23	8.3
55–59.....	115	55–59	150	–31	31	17.2
60–64.....	61	60–64	82	–33	33	28.7
65–69.....	19	65–69	25	–36	36	59.6
70–74.....	6	70–74	9	–10	10	52.1
75–99.....	2	75–79	3	–3	3	52.4
		80–99	1	–1	1	33.1
<b>Waiters and waitresses</b>						
16–99.....	1,410	—	1,408	–2	452	32
16–19.....	263	16–20	377	377	0	.0
20–24.....	402	21–24	311	48	211	52.7
25–29.....	212	25–29	191	–211	91	42.8
30–34.....	172	30–34	121	–91	52	30
35–39.....	133	35–39	120	–52	37	27.8
40–44.....	79	40–44	96	–37	17	21
45–49.....	52	45–49	62	–17	9	16.8
50–54.....	39	50–54	43	–9	14	34.8
55–59.....	25	55–59	26	–14	5	20.1
60–64.....	22	60–64	20	–5	12	56.5
65–69.....	8	65–69	10	–12	2	22.6
70–74.....	3	70–74	6	–2	1	49.6
75–99.....	2	75–79	1	–1	1	69.1
		80–99	1	–1	1	

<sup>1</sup>1997 data are averages of 1993, 1994, 1995, 1996, and 1997.

<sup>2</sup>2002 data are averages of 1998, 1999, 2000, 2001, and 2002.

1995, 1996, and 1997, and references to 2002 data represent averages for 1998, 1999, 2000, 2001, and 2002.

In most occupations, net leavers occur only in the older age groups, usually above age 45. This pattern typically describes individuals leaving in large numbers to retire. A different pattern displayed in some occupations is the vast majority of all net separations taking place in the youngest age groups. In this case, large numbers of workers probably obtained employment in the occupation when they first entered the workforce. Then, when they were ready to begin full-time jobs, or when they qualified for higher paying jobs, they transferred to another occupation. In both patterns, the net separations quantify the number of persons who permanently left the occupation. Table VI-1 shows these different patterns and illustrates how net separations for registered nurses and for waiters and waitresses were calculated.

In table VI-1, employment data by age group for registered nurses and for waiters and waitresses in 1997 are

<sup>1</sup>see Technical Note on page 153.

**Table VI-2. Net separations in selected teaching occupations, by age group, 1997-2002**

(Numbers in thousands)

Current Population Survey occupation	Number employed, 1997 <sup>1</sup>	Age group													
		16 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 99	
Teachers, except college and university.....	4,556	0	0	0	0	0	0	13	100	101	64	23	7	7	
Teachers, prekindergarten and kindergarten..	526	0	0	0	0	0	2	0	2	4	6	2	1	2	
Teachers, elementary school.....	1,750	0	0	0	0	0	0	13	47	42	28	7	1	2	
Teachers, secondary school.....	1,214	0	0	0	0	0	0	18	51	42	18	6	1	1	
Teachers, special education.....	326	0	0	2	2	0	0	3	8	8	4	1	0	0	
Teachers, n.e.c. <sup>2</sup> .....	740	0	0	0	0	0	0	0	0	5	8	7	4	3	

<sup>1</sup> 1997 data are averages of 1993, 1994, 1995, 1996, and 1997.

<sup>2</sup> n.e.c. = not elsewhere classified.

compared with corresponding data for a 5-year-older group in 2002. For example, the number of registered nurses aged 20 to 24 in 1997 is compared with the number of registered nurses aged 25 to 29 in 2002, and the difference is calculated. If the difference is positive, more individuals aged 20 to 24 in 1997 entered than left the occupation. Nothing is known about the numbers of persons transferring into the occupation, entering the labor force, immigrating from another country, transferring out of the occupation, leaving the labor force, or leaving the United States. The difference between the two groups simply identifies the amount by which total entrants exceed total leavers. If, by contrast, the difference is negative, more individuals left than entered the occupation. Only a negative difference results in a measure of net separations; positive differences are recorded as zero net separations for the age group. The separation rate for an age group is calculated by dividing net separations by 1997 employment in the age group. Net separations for all age groups were totaled and divided by total employment in 1997 to obtain the 5-year net separation rate for the occupation.

Table VI-1 also presents information on the percentage of leavers in each age group for registered nurses and for waiters and waitresses. This measure is calculated by dividing net leavers in the age group by 1997 employment for that age group. Information about the percentage of leavers in each age group is valuable because it permits estimates of net leavers in the future, a topic that will be discussed later.

Because registered nurses and waiters and waitresses are large occupations, the CPS sample provides quite reliable employment data for each age group within those occupations. However, for small occupations, such as actuaries, the sample is too sparse and the net separation data are unreliable. For example, actuaries have an irregular distribution of net separations among the age groups, and the net separation rate of about 19 percent is inconsistent with rates for other professional and related occupations.

To obtain a separation rate for each detailed CPS occupation, one of two procedures was used when data for an occupation were judged unreliable. When a larger detailed occupation had characteristics similar to those of the occupation in question, the larger occupation was chosen as a proxy, and the separation and employment data for the proxy occupation were substituted for the unreliable data and were

used to calculate separation rates. When there was no larger detailed occupation with characteristics similar to those of the occupation in question, separation and employment data for a summary occupation group were substituted for the unreliable data.

The procedure for determining separation rates for summary occupations, however, was not as straightforward as that for detailed occupations. Note that, in table VI-2, no net separations are measured for the summary occupation group teachers, except college and university, until age 45. Yet, two of the detailed occupations that make up the group—prekindergarten and kindergarten teachers and special-education teachers—exhibit net separations prior to that age. The summary occupation group does not register those separations because total net entrants in the other detailed occupations constituting the summary occupation group exceeded total net separations among prekindergarten and kindergarten teachers and special-education teachers in the relevant age group. To exclude the measure of net separations from the summary occupation group, however, would result in an understatement of separations from detailed occupations. To overcome this limitation, net separations in each age group for summary occupations were calculated by totaling the net separations for each detailed occupation in that age group. Thus, in table VI-3, the net separation data for each age group in the summary occupation group teachers, except college and university, is the sum of the data measured for prekindergarten and kindergarten teachers, elementary school teachers, secondary school teachers, special-education teachers, and teachers not elsewhere classified. (Detailed occupations may not sum to the totals shown because of rounding.)

**Projected replacement rates**

Thus far, all information presented about separations has been descriptive and retrospective; that is, it has described what occurred in the past. The BLS Employment Projections program, however, focuses on future opportunities, a purpose that requires projections of employment change and, in addition, projections of replacement needs due to total and net separations.

*Total replacement rates.* Total separation rates for all detailed occupations were developed from merged CPS data for the period 2003-04. As described earlier, total separation

**Table VI-3. Net separations in selected teaching occupations, adjusted summary occupation, by age group, 1997–2002**  
(Numbers in thousands)

Current Population Survey occupation	Number employed, 1997 <sup>1</sup>	Age group												
		16 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 99
Teachers, except college and university.....	4,556	0	0	2	2	0	2	35	108	101	64	22	7	8
Teachers, prekindergarten and kindergarten..	526	0	0	0	0	0	2	0	2	4	6	2	1	2
Teachers, elementary school.....	1,750	0	0	0	0	0	0	13	47	42	28	7	1	2
Teachers, secondary school.....	1,214	0	0	0	0	0	0	18	51	42	18	6	1	1
Teachers, special education.....	326	0	0	2	2	0	0	3	8	8	4	1	0	0
Teachers, n.e.c. <sup>2</sup> .....	740	0	0	0	0	0	0	0	0	5	8	7	4	3

<sup>1</sup> 1997 data are averages of 1993, 1994, 1995, 1996, and 1997.

<sup>2</sup> n.e.c. = not elsewhere classified.

rates from proxy occupations were substituted for small occupations when data for the latter appeared unreliable. If employment in the occupation in question remained the same or increased from 2003 to 2004, the 2003–04 total separation rate also was the replacement rate and should be used to estimate replacement needs during a projection period. However, if employment in the occupation declined, the replacement rate was calculated by subtracting the employment decline from the separations. Total replacement rates were used without adjustment for the 2004–14 projection period. Employment for 2009, the midpoint of the period, was multiplied by the annual average replacement rates for the 2003–04 period to project annual average replacement needs over the 2004–14 period. Although labor market conditions affect the replacement rates, attempts to adjust the rates would be fraught with difficulties because not enough is known about how cyclical factors and other labor market conditions affect the rates.

*Net replacement rates.* To develop a net separation rate for an occupation, employment figures for that occupation in a given age group in 1997 were compared with employment in the occupation in 2002 for a group that was 5 years older. (As noted earlier, data for 1997 actually consist of the average of data for 1993, 1994, 1995, 1996, and 1997, and data for 2002 consist of the average for 1998, 1999, 2000, 2001, and 2002.) If employment for the group increased, no net separations occurred, and separations were recorded as zero. If employment declined, the number was recorded as net separations for that age group. The 5-year net separation rate for the age group was calculated by dividing the number of net separations by employment in 1997. (See table VI-1.) The 5-year net separation rates for 1997–2002 for each age group could then be applied to employment in future years to obtain a projection of net separations. Excluded from these projections are the replacement needs attributable to those entering the occupation within the projection period.

Between 1997 and 2002, employment in most occupations increased or remained the same. For these occupations, the 1997–2002 net separation rates, by age, were used without adjustment to estimate net replacement needs during the projection period. If employment declined, however, one of several adjustments to the age-specific separation rates was used to obtain a net replacement rate that reduced the occu-

pational separation rate by the rate of decline in employment. When the employment decline was less than the number of net separations among persons aged 16 to 49 in 1997, the number of net separations for that age group was reduced by the decline, which was distributed in proportion to the number of net separations in each age subgroup of the group aged 16 to 49. This technique, which confines the adjustments to the ages most affected by adverse economic conditions, was the one most frequently used. Older workers are more likely to remain employed until they retire. In most of the remaining cases, the net separations were reduced in a like fashion for persons aged 16 to 54 or persons aged 16 to 64, depending on the distribution of net separations in the occupation and the amount by which employment declined. Then, the adjusted age-specific rates were used to calculate future net replacement needs for persons employed in 2002.

Using data for persons employed as registered nurses in 2002, table VI-4 illustrates the method for calculating net leavers over the period 2002–12. First, net leavers were calculated for 2002–07 by multiplying 2002 employment obtained from the CPS for each age group by the replacement rate for the same age group in 1997–2002. Before net leavers in 2007–12 were calculated, 2007 employment for each age group was estimated by identifying employment in 2002 for a 5-year-younger age group and subtracting any projected net leavers for the period 2002–07. For example, table VI-4 shows the 2007 employment figure for registered nurses aged 55 to 59 to be 210,000. This estimate was arrived at by identifying the 2002 employment figure for nurses aged 50 to 54 (254,000) and subtracting the 44,000 net leavers in 2002–07 from that age group. (Any discrepancies are due to rounding.) Then, net leavers for 2007–12 were calculated by multiplying employment for 2007 for each age group by the replacement rate for that age group. Summing the number of net leavers for each of the 5-year periods 2002–07 and 2007–12 provided an estimate of net leavers over the 10-year projection period 2002–12. The 2002–12 net replacement rates were calculated by dividing net leavers for 2002–12 by 2002 employment. Dividing the net leavers for 2002–12 by 10 yielded annual average net replacement needs.

New entrants—individuals who were younger than age 16 in 2002, but who could be expected to join the group of employed persons after 2002—were not included in the es-

estimate of replacements for 2002–12. If they would have been included, estimates of replacements for occupations with net transfers in the younger age groups—such as those for waiters and waitresses—would be larger.

### Replacement rates based on the Occupational Employment Statistics survey

The preceding sections described procedures for estimating replacement rates by using detailed occupational data from the CPS survey. However, the employment matrices used by the BLS projections program to estimate current and projected occupational employment are based primarily on data from the Occupational Employment Statistics (OES) survey, which uses occupational definitions consistent with the 2000 Standard Occupational Classification system. BLS then uses current and projected occupational employment estimates from these employment matrices to calculate the employment-growth component of projected job openings. Combining the replacement-needs component of projected job openings with the growth component of projected openings requires developing occupational replacement rates that are consistent with the OES survey. These rates were developed by (1) identifying the CPS occupation or occupations that are equivalent to the detailed OES survey-based occupation and (2) either using the CPS rate directly or calculating a weighted rate, with

**Table VI-4. Net replacement data for registered nurses, by age group, 2002–12**  
(Numbers in thousands)

Age	2002 employment <sup>1</sup>		Net leavers, 2002–07	2007 employment	Net leavers, 2007–12
	Number	Net replacement rate, 1997–2002 (percent)		Number	
16–99 .....	2,145	7.7	200	—	253
16–19 ....	1	0	0	0	0
20–24 ....	57	0	0	1	0
25–29 ....	204	0	0	57	0
30–34 ....	257	0	0	204	0
35–39 ....	324	0	0	257	0
40–44 ....	406	3.7	15	324	12
45–49 ....	371	8.3	31	391	32
50–54 ....	254	17.2	44	340	59
55–59 ....	150	28.7	43	210	60
60–64 ....	82	59.6	49	107	64
65–69 ....	25	52.1	13	33	17
70–74 ....	9	52.4	5	12	6
75–99 ....	4	33.1	1	7	2

<sup>1</sup> 2002 data are averages of 1998, 1999, 2000, 2001, and 2002.

OES or CPS employment figures as weights, if the occupation consists of more than one OES or CPS occupation. Table VI-5 presents 2003–04 total and 2004–14 net replacement rates for OES-based matrix occupations and shows 2004–14 annual average total and net replacement needs. Information identifying OES occupations for which CPS equivalent occupational data were replaced with that of a proxy CPS occupation is available from the Chief, Division of Occupational Outlook at (202) 691–5703.

**Technical Note:** The 5-year period used to calculate net separations usually ends with the base year in the projection cycle. The 5-year period for calculating 2004–14 net separations should be 1999–2004. However, CPS data compatibility problems arose as a result of the use of two classification systems. CPS data prior to 2000 are coded in accordance with the 1990 Census of Population occupational classification system; CPS data for 2003 and later are coded in accordance with the 2000 Census of Population occupational classification system. CPS data for the years 2000, 2001, and 2002 are coded on the basis of both classification systems. Since each reference year is the average of the previous 5 years, CPS data for the years 1995 through 2004 would have been used. To make the data uniformly comparable, CPS data for 2003 and 2004 would have had to be recoded on the basis of the 1990 Census of Population classification system. Because of time and personnel constraints, recoding those 2 years of data was not feasible.

Instead of developing new net separations for the 2004–14 projection cycle, the net replacements calculated during the 2002–12 projection cycle were applied to the 2004 OES-based employment matrix. Because net replacements are calculated with CPS data and the employment matrix is based on OES data, CPS employment in the base year and net replacements must be cross-walked to the employment matrix. The 2002 CPS employment estimates and the 2002–12 net replacement estimates were cross-walked to the 2002 matrix during the last projection cycle in order to calculate 2002–12 matrix-based net replacements. For the current projection cycle, the 2002–12 matrix-based net replacements were cross-walked to the 2004 matrix in order to determine the 2004–14 net replacement needs. Because the differences between the 2002 and 2004 employment matrices are small, the 2002–12 and 2004–14 net replacement rates are almost identical.

Since the 2002–12 net separations and net replacement data were the basis of the 2004–14 net replacement needs, the tables describing the 2002–12 calculations remain valid.

Proper calculations of net replacements will resume with the 2006–16 projections. These net replacements will be based on the 2000 Census of Population occupational classification system. CPS data for the years 1997, 1998, and 1999 will be recoded in order to ensure data compatibility.

## Frequently asked questions about replacement needs

*Q. Why does BLS compute estimates of both total and net replacement needs?*

A. A single estimate is not appropriate for all purposes. Vocational guidance counseling, for example, requires information about growth and replacement needs that quantifies all opportunities in the labor market. By contrast, information about opportunities for new entrants is more useful for planning appropriate training programs. Thus, two different estimates are provided.

*Q. Why are the estimates of growth and net replacement needs described as providing a minimum measure of training needs?*

A. Training needs are underestimated by this measure because for many occupations, not all persons who complete training enter the occupation for which they qualify. As a result, more workers may be trained to ensure that an adequate number is available to fill expected job openings.

*Q. Do the 2004–14 projected net replacement rates assume that future labor market behavior will not change from past patterns?*

A. Yes, 1997–2002 occupation- and age-specific rates are used in calculating the projected rates. The 1997–2002 rates are applied to projected occupational age-distribution data. The result is an occupation-specific replacement rate that captures the impact of demographic, but not behavioral, changes.

*Q. Are total and net separation rates the same as total and net replacement rates?*

A. In most occupations, yes. If employment declines during the period being examined, however, separations will exceed replacement needs by the decline in employment. The reason is that, when employment is declining, not all persons who separate from an occupation are replaced.

*Q. Should a projected decline in employment be subtracted from replacement needs to estimate job opportunities?*

A. No! If employment declines, the number of opportunities resulting from growth is zero, and replacement needs constitute the only source of opportunities. When employment declines, separations increase both because individuals are losing their jobs and, in the case of net separations, because fewer are entering the occupation. Replacement needs—calculated by reducing separations by any decline in employment—should not be further reduced by projected employment declines.

*Q. If employment is declining rapidly, is it possible for replacement needs to be zero?*

A. In the extreme case, yes. For example, assume that, in a limited geographic area, a single firm is the sole employer of tool and die makers. If the firm ceases operations, all tool and die makers in the area will leave the occupation; separations will equal the decline in employment, and there will be no replacement needs. An analogous situation, though possible, is unlikely to occur at the national level because not all areas of the country share the same market conditions.

*Q. Are there any data on replacement needs by industry?*

A. No, estimates of replacement needs are created only for occupations. The Bureau of Labor Statistics has a survey that collects data on current job openings and labor turnover by industry. There is no equivalent survey of job openings or labor turnover by occupation. For more information, see the Job Openings and Labor Turnover Survey program Web site: <http://www.bls.gov/jlt/home.htm>.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
			Total, 2003-4	Net, 2004-14	Total	Net
<b>00-0000</b>	Total, all occupations .....	<b>145,612</b>	<b>15.5</b>	<b>23.6</b>	<b>24,054</b>	<b>3,432</b>
<b>11-1300</b>	<b>Management, business, and financial occupations.....</b>	<b>14,987</b>	<b>9.7</b>	<b>17.4</b>	<b>1,566</b>	<b>261</b>
11-0000	Management occupations .....	9,115	9.1	17.2	878	157
11-1000	Top executives.....	2,317	8.4	18.7	212	43
11-1011	Chief executives.....	444	6.6	18.9	31	8
11-1021	General and operations managers.....	1,807	9.1	18.9	178	34
11-1031	Legislators <sup>1</sup> .....	66	3.7	12.9	2	1
11-2000	Advertising, marketing, promotions, public relations, and sales managers .....	646	9.0	18.3	64	12
11-2011	Advertising and promotions managers .....	64	11.4	18.1	8	1
11-2020	Marketing and sales managers .....	525	9.1	18.5	53	10
11-2021	Marketing managers.....	188	9.1	18.5	19	3
11-2022	Sales managers .....	337	9.1	18.5	34	6
11-2031	Public relations managers .....	58	5.2	17.3	3	1
11-3000	Operations specialties managers .....	1,561	8.0	17.3	135	27
11-3011	Administrative services managers .....	268	6.9	19.4	20	5
11-3021	Computer and information systems managers.....	280	5.5	18.2	17	5
11-3031	Financial managers .....	528	9.7	14.3	55	8
11-3040	Human resources managers .....	157	4.8	16.9	8	3
11-3041	Compensation and benefits managers.....	57	4.8	16.9	3	1
11-3042	Training and development managers .....	37	4.8	16.9	2	1
11-3049	Human resources managers, all other .....	62	4.8	16.9	3	1
11-3051	Industrial production managers .....	160	8.0	19.3	13	3
11-3061	Purchasing managers .....	75	9.7	21.7	7	2
11-3071	Transportation, storage, and distribution managers .....	92	13.9	19.5	14	2
11-9000	Other management occupations .....	4,591	9.9	16.3	468	75
11-9010	Agricultural managers.....	1,285	9.5	7.8	115	10
11-9011	Farm, ranch, and other agricultural managers .....	220	8.6	17.2	19	4
11-9012	Farmers and ranchers .....	1,065	9.7	5.9	96	6
11-9021	Construction managers .....	431	5.2	18.1	24	8
11-9030	Education administrators.....	442	10.5	24.8	50	11
11-9031	Education administrators, preschool and child care center/program .....	58	10.5	24.8	7	1
11-9032	Education administrators, elementary and secondary school.....	225	10.5	24.8	25	6
11-9033	Education administrators, postsecondary .....	132	10.5	24.8	15	3
11-9039	Education administrators, all other .....	26	10.5	24.8	3	1
11-9041	Engineering managers <sup>1</sup> .....	190	6.2	19.9	13	4
11-9051	Food service managers.....	371	14.4	16.3	57	6
11-9061	Funeral directors .....	30	9.0	28.5	3	1
11-9071	Gaming managers <sup>1</sup> .....	4	18.2	18.8	1	( <sup>2</sup> )
11-9081	Lodging managers.....	58	13.6	16.6	9	1
11-9111	Medical and health services managers .....	248	10.0	19.5	28	5
11-9121	Natural sciences managers <sup>1</sup> .....	42	8.9	19.2	4	1
11-9131	Postmasters and mail superintendents <sup>1</sup> .....	26	9.1	18.9	2	( <sup>2</sup> )
11-9141	Property, real estate, and community association managers.....	361	13.6	18.7	53	7
11-9151	Social and community service managers.....	134	9.1	19.2	14	3
11-9199	Managers, all other.....	969	9.7	19.5	97	19
13-0000	Business and financial operations occupations.....	5,873	10.7	17.7	687	104
13-1000	Business operations specialists .....	3,375	11.5	17.7	426	60
13-1011	Agents and business managers of artists, performers, and athletes .....	21	8.5	19.7	2	( <sup>2</sup> )
13-1020	Buyers and purchasing agents.....	445	8.0	25.7	37	11
13-1021	Purchasing agents and buyers, farm products <sup>1</sup> .....	16	9.0	34.1	1	1
13-1022	Wholesale and retail buyers, except farm products .....	156	11.6	26.2	19	4
13-1023	Purchasing agents, except wholesale, retail, and farm products.....	273	5.9	24.9	17	7
13-1030	Claims adjusters, appraisers, examiners, and investigators.....	263	9.1	12.3	26	3
13-1031	Claims adjusters, examiners, and investigators .....	250	9.1	12.3	25	3
13-1032	Insurance appraisers, auto damage.....	13	9.1	12.3	1	( <sup>2</sup> )
13-1041	Compliance officers, except agriculture, construction, health and safety, and transportation.....	177	7.7	23.5	14	4

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
			Total, 2003-4	Net, 2004-14	Total	Net
13-1051	Cost estimators .....	198	5.3	22.4	11	4
13-1061	Emergency management specialists.....	10	16.5	22.0	2	( <sup>2</sup> )
13-1070	Human resources, training, and labor relations specialists .....	663	11.7	15.7	87	10
13-1071	Employment, recruitment, and placement specialists .....	182	11.7	15.3	24	3
13-1072	Compensation, benefits, and job analysis specialists .....	99	11.7	15.3	13	2
13-1073	Training and development specialists .....	216	11.7	15.3	28	3
13-1079	Human resources, training, and labor relations specialists, all other .....	166	11.7	17.0	22	3
13-1081	Logisticians <sup>1</sup> .....	53	10.4	17.0	6	1
13-1111	Management analysts .....	605	10.4	13.7	69	8
13-1121	Meeting and convention planners .....	43	5.7	21.8	3	1
13-1199	Business operation specialists, all other .....	897	16.5	17.0	168	15
13-2000	Financial specialists .....	2,497	9.6	17.7	261	44
13-2011	Accountants and auditors .....	1,176	9.9	18.9	130	22
13-2021	Appraisers and assessors of real estate .....	102	5.7	21.4	6	2
13-2031	Budget analysts .....	58	8.1	16.3	5	1
13-2041	Credit analysts .....	68	3.5	15.6	2	1
13-2050	Financial analysts and advisors .....	456	10.0	14.8	50	7
13-2051	Financial analysts .....	197	11.5	14.8	25	3
13-2052	Personal financial advisors .....	158	7.3	13.0	13	2
13-2053	Insurance underwriters .....	101	11.6	17.7	12	2
13-2061	Financial examiners <sup>1</sup> .....	24	9.9	22.8	3	1
13-2070	Loan counselors and officers .....	325	11.7	16.1	40	5
13-2071	Loan counselors .....	34	11.7	16.1	4	1
13-2072	Loan officers .....	291	11.7	16.1	36	5
13-2080	Tax examiners, collectors, preparers, and revenue agents .....	162	7.7	19.5	13	3
13-2081	Tax examiners, collectors, and revenue agents .....	76	4.2	22.9	3	2
13-2082	Tax preparers .....	86	10.7	16.5	10	1
13-2099	Financial specialists, all other .....	127	8.9	17.6	12	2
<b>15-2900</b>	<b>Professional and related occupations .....</b>	<b>28,544</b>	<b>9.7</b>	<b>19.1</b>	<b>3,069</b>	<b>547</b>
15-0000	Computer and mathematical science occupations .....	3,153	7.8	13.4	282	42
15-1000	Computer specialists .....	3,046	7.6	12.9	269	39
15-1011	Computer and information scientists, research .....	22	7.2	11.3	2	( <sup>2</sup> )
15-1021	Computer programmers .....	455	5.9	23.6	27	11
15-1030	Computer software engineers .....	800	5.5	9.9	54	8
15-1031	Computer software engineers, applications .....	460	5.5	9.9	32	5
15-1032	Computer software engineers, systems software ..	340	5.5	9.9	23	3
15-1041	Computer support specialists .....	518	12.9	12.3	75	6
15-1051	Computer systems analysts .....	487	7.2	11.3	40	6
15-1061	Database administrators .....	104	3.7	10.3	5	1
15-1071	Network and computer systems administrators .....	278	7.1	11.1	24	3
15-1081	Network systems and data communications analysts .....	231	10.5	11.8	31	3
15-1099	Computer specialists, all other .....	149	7.2	11.3	12	2
15-2000	Mathematical science occupations.....	107	11.3	26.7	13	3
15-2011	Actuaries <sup>1</sup> .....	18	11.1	42.7	2	1
15-2021	Mathematicians <sup>1</sup> .....	3	11.1	44.0	( <sup>2</sup> )	( <sup>2</sup> )
15-2031	Operations research analysts .....	58	11.5	21.9	7	1
15-2041	Statisticians <sup>1</sup> .....	19	11.1	26.3	2	( <sup>2</sup> )
15-2090	Miscellaneous mathematical science occupations <sup>1</sup> ...	10	11.1	22.7	1	( <sup>2</sup> )
15-2091	Mathematical technicians <sup>1</sup> .....	2	11.1	22.7	( <sup>2</sup> )	( <sup>2</sup> )
15-2099	Mathematical scientists, all other <sup>1</sup> .....	9	11.1	22.7	1	( <sup>2</sup> )
17-0000	Architecture and engineering occupations .....	2,520	6.8	22.3	182	56
17-1000	Architects, surveyors, and cartographers .....	220	4.1	18.3	10	4
17-1010	Architects, except naval.....	154	3.4	11.4	6	2
17-1011	Architects, except landscape and naval .....	129	3.4	11.4	5	1
17-1012	Landscape architects .....	25	3.4	11.4	1	( <sup>2</sup> )
17-1020	Surveyors, cartographers, and photogrammetrists <sup>1</sup> ...	67	6.0	34.2	4	2
17-1021	Cartographers and photogrammetrists <sup>1</sup> .....	11	6.0	34.2	1	( <sup>2</sup> )
17-1022	Surveyors <sup>1</sup> .....	56	6.0	34.2	4	2

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
			Total, 2003-4	Net, 2004-14	Total	Net
17-2000	Engineers .....	1,449	6.1	21.6	94	31
17-2011	Aerospace engineers.....	76	7.3	24.8	6	2
17-2021	Agricultural engineers <sup>1</sup> .....	3	6.3	32.9	( <sup>2</sup> )	( <sup>2</sup> )
17-2031	Biomedical engineers <sup>1</sup> .....	10	5.4	17.0	1	( <sup>2</sup> )
17-2041	Chemical engineers.....	31	6.9	29.9	2	1
17-2051	Civil engineers.....	237	6.0	15.9	15	4
17-2061	Computer hardware engineers <sup>1</sup> .....	77	5.5	16.7	4	1
17-2070	Electrical and electronics engineers.....	299	6.4	19.7	20	6
17-2071	Electrical engineers.....	156	6.4	19.7	11	3
17-2072	Electronics engineers, except computer.....	143	6.4	19.7	10	3
17-2081	Environmental engineers.....	49	5.9	17.0	3	1
17-2110	Industrial engineers, including health and safety.....	203	5.4	24.2	12	5
17-2111	Health and safety engineers, except mining safety engineers and inspectors.....	27	5.4	24.2	2	1
17-2112	Industrial engineers.....	177	5.4	24.2	10	4
17-2121	Marine engineers and naval architects <sup>1</sup> .....	7	6.0	47.2	( <sup>2</sup> )	( <sup>2</sup> )
17-2131	Materials engineers <sup>1</sup> .....	21	6.9	26.3	2	1
17-2141	Mechanical engineers.....	226	3.6	27.3	9	6
17-2151	Mining and geological engineers, including mining safety engineers <sup>1</sup> .....	5	7.9	28.9	( <sup>2</sup> )	( <sup>2</sup> )
17-2161	Nuclear engineers.....	17	6.5	29.9	1	1
17-2171	Petroleum engineers <sup>1</sup> .....	16	7.9	31.8	1	1
17-2199	Engineers, all other.....	172	9.1	19.0	17	3
17-3000	Drafters, engineering, and mapping technicians.....	851	8.8	24.5	78	21
17-3010	Drafters.....	254	7.9	27.7	21	7
17-3011	Architectural and civil drafters.....	110	7.9	28.1	9	3
17-3012	Electrical and electronics drafters.....	38	7.9	28.1	3	1
17-3013	Mechanical drafters.....	82	7.9	28.1	7	2
17-3019	Drafters, all other.....	24	7.9	24.1	2	1
17-3020	Engineering technicians, except drafters.....	532	8.8	21.5	49	11
17-3021	Aerospace engineering and operations technicians.....	10	8.8	20.9	1	( <sup>2</sup> )
17-3022	Civil engineering technicians.....	94	8.8	20.9	9	2
17-3023	Electrical and electronic engineering technicians.....	182	8.8	20.9	17	4
17-3024	Electro-mechanical technicians.....	19	8.8	20.9	2	( <sup>2</sup> )
17-3025	Environmental engineering technicians.....	20	8.8	20.9	2	( <sup>2</sup> )
17-3026	Industrial engineering technicians.....	69	8.8	20.9	6	1
17-3027	Mechanical engineering technicians.....	48	8.8	20.9	4	1
17-3029	Engineering technicians, except drafters, all other.....	91	8.8	24.1	8	2
17-3031	Surveying and mapping technicians.....	65	12.2	36.4	8	2
19-0000	Life, physical, and social science occupations.....	1,316	8.8	24.0	125	32
19-1000	Life scientists.....	232	9.8	23.8	25	6
19-1010	Agricultural and food scientists.....	30	4.3	17.8	1	1
19-1011	Animal scientists.....	3	4.3	17.8	( <sup>2</sup> )	( <sup>2</sup> )
19-1012	Food scientists and technologists.....	11	4.3	17.8	( <sup>2</sup> )	( <sup>2</sup> )
19-1013	Soil and plant Scientists.....	17	4.3	17.8	1	( <sup>2</sup> )
19-1020	Biological scientists.....	77	6.3	31.3	5	2
19-1021	Biochemists and biophysicists.....	16	6.3	31.3	1	1
19-1022	Microbiologists.....	15	6.3	31.3	1	( <sup>2</sup> )
19-1023	Zoologists and wildlife biologists.....	16	6.3	31.3	1	1
19-1029	Biological scientists, all other.....	29	6.3	31.3	2	1
19-1030	Conservation scientists and foresters <sup>1</sup> .....	32	7.9	29.2	3	1
19-1031	Conservation scientists <sup>1</sup> .....	19	7.9	29.2	2	1
19-1032	Foresters <sup>1</sup> .....	13	7.9	29.2	1	( <sup>2</sup> )
19-1040	Medical scientists.....	77	14.8	17.6	13	1
19-1041	Epidemiologists.....	5	14.8	17.6	1	( <sup>2</sup> )
19-1042	Medical scientists, except epidemiologists.....	72	14.8	17.6	13	1
19-1099	Life scientists, all other.....	15	14.8	17.6	3	( <sup>2</sup> )
19-2000	Physical scientists.....	250	6.7	25.2	18	6
19-2010	Astronomers and physicists <sup>1</sup> .....	16	7.3	32.4	1	1
19-2011	Astronomers <sup>1</sup> .....	1	7.3	32.4	( <sup>2</sup> )	( <sup>2</sup> )
19-2012	Physicists <sup>1</sup> .....	15	7.3	32.4	1	( <sup>2</sup> )
19-2021	Atmospheric and space scientists <sup>1</sup> .....	7	7.3	39.3	1	( <sup>2</sup> )
19-2030	Chemists and materials scientists.....	90	5.4	32.7	5	3
19-2031	Chemists.....	82	5.4	32.7	5	3
19-2032	Materials scientists.....	8	5.4	32.7	( <sup>2</sup> )	( <sup>2</sup> )

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
			Total, 2003-4	Net, 2004-14	Total	Net
19-2040	Environmental scientists and geoscientists .....	109	7.9	17.8	9	2
19-2041	Environmental scientists and specialists, including health .....	73	7.9	17.8	6	1
19-2042	Geoscientists, except hydrologists and geographers .....	28	7.9	17.8	2	( <sup>2</sup> )
19-2043	Hydrologists .....	8	7.9	17.8	1	( <sup>2</sup> )
19-2099	Physical scientists, all other .....	29	6.2	22.8	2	1
19-3000	Social scientists and related occupations .....	492	6.2	24.6	33	12
19-3011	Economists <sup>1</sup> .....	13	7.6	29.0	1	( <sup>2</sup> )
19-3020	Market and survey researchers .....	212	7.6	25.9	18	5
19-3021	Market research analysts .....	190	7.6	25.9	16	5
19-3022	Survey researchers .....	22	7.6	25.9	2	1
19-3030	Psychologists .....	179	3.9	21.8	8	4
19-3031	Clinical, counseling, and school psychologists .....	167	3.9	21.8	7	4
19-3032	Industrial-organizational psychologists .....	2	3.9	21.8	( <sup>2</sup> )	( <sup>2</sup> )
19-3039	Psychologists, all other .....	10	3.9	21.2	( <sup>2</sup> )	( <sup>2</sup> )
19-3041	Sociologists <sup>1</sup> .....	5	7.6	35.1	( <sup>2</sup> )	( <sup>2</sup> )
19-3051	Urban and regional planners <sup>1</sup> .....	32	6.0	33.4	2	1
19-3090	Miscellaneous social scientists and related workers ..	51	7.3	20.9	4	1
19-3091	Anthropologists and archeologists .....	5	7.3	20.2	( <sup>2</sup> )	( <sup>2</sup> )
19-3092	Geographers .....	1	7.3	20.2	( <sup>2</sup> )	( <sup>2</sup> )
19-3093	Historians .....	3	7.3	20.2	( <sup>2</sup> )	( <sup>2</sup> )
19-3094	Political scientists .....	5	7.3	20.2	( <sup>2</sup> )	( <sup>2</sup> )
19-3099	Social scientists and related workers, all other .....	38	7.3	21.2	3	1
19-4000	Life, physical, and social science technicians .....	342	13.3	22.4	49	8
19-4011	Agricultural and food science technicians .....	23	3.5	19.3	1	( <sup>2</sup> )
19-4021	Biological technicians .....	64	9.5	16.9	7	1
19-4031	Chemical technicians <sup>1</sup> .....	62	10.2	24.9	6	2
19-4041	Geological and petroleum technicians <sup>1</sup> .....	11	10.2	25.5	1	( <sup>2</sup> )
19-4051	Nuclear technicians <sup>1</sup> .....	7	10.2	26.9	1	( <sup>2</sup> )
19-4061	Social science research assistants .....	18	17.4	23.5	3	( <sup>2</sup> )
19-4090	Other life, physical, and social science technicians ...	157	17.4	23.5	30	4
19-4091	Environmental science and protection technicians, including health .....	31	17.4	23.5	6	1
19-4092	Forensic science technicians .....	10	17.4	23.5	2	( <sup>2</sup> )
19-4093	Forest and conservation technicians .....	33	17.4	23.5	6	1
19-4099	Life, physical, and social science technicians, all other .....	83	17.4	23.5	16	2
21-0000	Community and social services occupations .....	2,317	9.6	19.2	247	44
21-1000	Counselors, social workers, and other community and social service specialists .....	1,755	10.6	19.3	209	34
21-1010	Counselors .....	601	10.6	22.7	70	14
21-1011	Substance abuse and behavioral disorder counselors .....	76	10.6	22.8	9	2
21-1012	Educational, vocational, and school counselors .....	248	10.6	22.8	28	6
21-1013	Marriage and family therapists .....	24	10.6	22.8	3	1
21-1014	Mental health counselors .....	96	10.6	22.8	12	2
21-1015	Rehabilitation counselors .....	131	10.6	22.8	15	3
21-1019	Counselors, all other .....	25	10.6	18.7	3	( <sup>2</sup> )
21-1020	Social workers .....	562	8.7	17.3	54	10
21-1021	Child, family, and school social workers .....	272	8.7	17.1	26	5
21-1022	Medical and public health social workers .....	110	8.7	17.1	11	2
21-1023	Mental health and substance abuse social workers .....	116	8.7	17.1	11	2
21-1029	Social workers, all other .....	64	8.7	18.7	6	1
21-1090	Miscellaneous community and social service specialists .....	592	12.5	17.8	84	11
21-1091	Health educators .....	49	12.5	17.6	7	1
21-1092	Probation officers and correctional treatment specialists .....	93	12.5	17.6	12	2
21-1093	Social and human service assistants .....	352	12.5	17.6	51	6
21-1099	Community and social service specialists, all other .....	98	12.5	18.7	14	2
21-2000	Religious workers .....	562	6.4	18.8	38	11
21-2011	Clergy .....	422	4.7	20.5	21	9
21-2021	Directors, religious activities and education .....	90	8.9	11.0	9	1
21-2099	Religious workers, all other .....	50	16.1	18.7	8	1

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation	Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
		Total, 2003-4	Net, 2004-14	Total	Net
23-0000 Legal occupations .....	1,220	6.1	11.6	80	14
23-1000 Lawyers, judges, and related workers .....	783	3.7	12.9	31	10
23-1011 Lawyers .....	735	3.7	12.9	29	9
23-1020 Judges, magistrates, and other judicial workers <sup>1</sup> .....	47	3.7	12.9	2	1
23-1021 Administrative law judges, adjudicators, and hearing officers <sup>1</sup> .....	16	3.7	12.9	1	( <sup>2</sup> )
23-1022 Arbitrators, mediators, and conciliators <sup>1</sup> .....	5	3.7	12.9	( <sup>2</sup> )	( <sup>2</sup> )
23-1023 Judges, magistrate judges, and magistrates <sup>1</sup> .....	27	3.7	12.9	1	( <sup>2</sup> )
23-2000 Legal support workers .....	437	10.4	9.4	50	4
23-2011 Paralegals and legal assistants .....	224	8.3	8.0	21	2
23-2090 Miscellaneous legal support workers .....	213	13.0	10.9	29	2
23-2091 Court reporters .....	18	13.0	10.9	3	( <sup>2</sup> )
23-2092 Law clerks .....	51	13.0	10.9	7	1
23-2093 Title examiners, abstractors, and searchers .....	61	13.0	10.9	8	1
23-2099 Legal support workers, all other .....	83	13.0	10.9	11	1
25-0000 Education, training, and library occupations .....	8,698	13.5	20.9	1,288	182
25-1000 Postsecondary teachers .....	1,628	14.6	22.6	277	37
25-2000 Primary, secondary, and special education teachers .....	4,270	10.1	22.4	469	96
25-2010 Preschool and kindergarten teachers .....	601	12.5	11.9	87	7
25-2011 Preschool teachers, except special education .....	431	12.5	11.9	63	5
25-2012 Kindergarten teachers, except special education .....	171	12.5	11.9	24	2
25-2020 Elementary and middle school teachers .....	2,102	11.1	22.1	253	46
25-2021 Elementary school teachers, except special education .....	1,457	11.1	22.1	176	32
25-2022 Middle school teachers, except special and vocational education .....	628	11.1	22.1	74	14
25-2023 Vocational education teachers, middle school .....	17	11.1	22.1	2	( <sup>2</sup> )
25-2030 Secondary school teachers .....	1,126	8.4	28.1	101	32
25-2031 Secondary school teachers, except special and vocational education .....	1,024	8.4	28.1	92	29
25-2032 Vocational education teachers, secondary school .....	101	8.4	28.1	9	3
25-2040 Special education teachers .....	441	5.9	23.8	29	11
25-2041 Special education teachers, preschool, kindergarten, and elementary school .....	205	5.9	23.8	14	5
25-2042 Special education teachers, middle school .....	98	5.9	23.8	6	2
25-2043 Special education teachers, secondary school .....	138	5.9	23.8	9	3
25-3000 Other teachers and instructors .....	977	23.8	12.3	253	12
25-3011 Adult literacy, remedial education, and GED teachers and instructors .....	98	23.8	12.3	25	1
25-3021 Self-enrichment education teachers .....	253	23.8	12.3	68	3
25-3099 Teachers and instructors, all other .....	626	23.8	12.3	160	8
25-4000 Librarians, curators, and archivists .....	308	10.5	28.9	34	9
25-4010 Archivists, curators, and museum technicians .....	27	12.1	22.0	3	1
25-4011 Archivists .....	6	12.1	22.0	1	( <sup>2</sup> )
25-4012 Curators .....	10	12.1	22.0	1	( <sup>2</sup> )
25-4013 Museum technicians and conservators .....	10	12.1	22.0	1	( <sup>2</sup> )
25-4021 Librarians .....	159	4.4	23.9	7	4
25-4031 Library technicians .....	122	17.8	36.9	23	5
25-9000 Other education, training, and library occupations .....	1,515	15.6	18.7	255	28
25-9011 Audio-visual collections specialists .....	9	8.6	15.2	1	( <sup>2</sup> )
25-9021 Farm and home management advisors .....	16	8.6	15.2	1	( <sup>2</sup> )
25-9031 Instructional coordinators .....	117	8.6	15.2	11	2
25-9041 Teacher assistants .....	1,296	16.9	19.3	234	25
25-9099 Education, training, and library workers, all other .....	77	8.6	15.2	7	1
27-0000 Arts, design, entertainment, sports, and media occupations .....	2,515	14.4	18.7	389	47
27-1000 Art and design occupations .....	780	12.9	15.6	107	12
27-1010 Artists and related workers .....	208	12.9	21.4	28	4
27-1011 Art directors .....	71	12.9	21.7	10	2
27-1012 Craft artists .....	6	12.9	17.8	1	( <sup>2</sup> )
27-1013 Fine artists, including painters, sculptors, and illustrators .....	29	12.9	21.7	4	1
27-1014 Multi-media artists and animators .....	94	12.9	21.7	13	2
27-1019 Artists and related workers, all other .....	9	12.9	17.8	1	( <sup>2</sup> )

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
			Total, 2003-4	Net, 2004-14	Total	Net
27-1020	Designers .....	572	12.9	13.5	79	8
27-1021	Commercial and industrial designers .....	49	12.9	13.4	7	1
27-1022	Fashion designers .....	17	12.9	13.4	2	( <sup>2</sup> )
27-1023	Floral designers .....	98	12.9	13.4	13	1
27-1024	Graphic designers .....	228	12.9	13.4	32	3
27-1025	Interior designers .....	65	12.9	13.4	9	1
27-1026	Merchandise displayers and window trimmers .....	86	12.9	13.4	12	1
27-1027	Set and exhibit designers .....	13	12.9	13.4	2	( <sup>2</sup> )
27-1029	Designers, all other .....	16	12.9	17.8	2	( <sup>2</sup> )
27-2000	Entertainers and performers, sports and related occupations .....	732	19.7	20.1	157	15
27-2010	Actors, producers, and directors .....	157	11.3	13.9	19	2
27-2011	Actors .....	74	12.2	12.7	10	1
27-2012	Producers and directors .....	83	10.6	15.0	10	1
27-2020	Athletes, coaches, umpires, and related workers .....	212	30.1	19.2	70	4
27-2021	Athletes and sports competitors .....	17	30.1	19.2	6	( <sup>2</sup> )
27-2022	Coaches and scouts .....	178	30.1	19.2	59	3
27-2023	Umpires, referees, and other sports officials .....	16	30.1	19.2	5	( <sup>2</sup> )
27-2030	Dancers and choreographers .....	38	17.7	61.5	7	2
27-2031	Dancers .....	19	17.7	61.5	4	1
27-2032	Choreographers .....	19	17.7	61.5	4	1
27-2040	Musicians, singers, and related workers .....	249	16.9	21.0	45	5
27-2041	Music directors and composers .....	60	16.9	21.0	11	1
27-2042	Musicians and singers .....	189	16.9	21.0	34	4
27-2099	Entertainers and performers, sports and related workers, all other .....	76	17.8	12.2	15	1
27-3000	Media and communication occupations .....	710	11.2	19.4	86	14
27-3010	Announcers .....	69	14.6	25.3	10	2
27-3011	Radio and television announcers .....	57	14.6	25.3	8	1
27-3012	Public address system and other announcers .....	12	14.6	25.3	2	( <sup>2</sup> )
27-3020	News analysts, reporters and correspondents .....	64	7.3	24.2	5	2
27-3021	Broadcast news analysts .....	8	7.3	24.2	1	( <sup>2</sup> )
27-3022	Reporters and correspondents .....	56	7.3	24.2	4	1
27-3031	Public relations specialists .....	188	16.1	14.4	34	3
27-3040	Writers and editors .....	320	8.4	21.8	29	7
27-3041	Editors .....	127	10.1	24.2	14	3
27-3042	Technical writers .....	50	7.2	28.8	4	1
27-3043	Writers and authors .....	142	7.4	17.2	11	2
27-3090	Miscellaneous media and communications workers ..	70	10.9	12.1	8	1
27-3091	Interpreters and translators .....	31	10.9	12.1	4	( <sup>2</sup> )
27-3099	Media and communication workers, all other .....	39	10.9	12.1	5	( <sup>2</sup> )
27-4000	Media and communication equipment occupations .....	293	12.6	21.9	39	6
27-4010	Broadcast and sound engineering technicians and radio operators .....	95	9.2	24.5	9	2
27-4011	Audio and video equipment technicians .....	46	9.2	24.5	5	1
27-4012	Broadcast technicians .....	34	9.2	24.5	3	1
27-4013	Radio operators .....	2	9.2	24.5	( <sup>2</sup> )	( <sup>2</sup> )
27-4014	Sound engineering technicians .....	13	9.2	24.5	1	( <sup>2</sup> )
27-4021	Photographers .....	129	15.5	20.4	21	3
27-4030	Television, video, and motion picture camera operators and editors .....	49	11.2	21.2	6	1
27-4031	Camera operators, television, video, and motion picture .....	28	11.2	21.2	3	1
27-4032	Film and video editors .....	20	11.2	21.2	2	( <sup>2</sup> )
27-4099	Media and communication equipment workers, all other <sup>1</sup> .....	19	13.5	21.3	3	( <sup>2</sup> )
29-0000	Healthcare practitioners and technical occupations .....	6,805	6.2	19.0	476	129
29-1000	Health diagnosing and treating practitioners .....	4,190	5.3	19.6	253	82
29-1011	Chiropractors <sup>1</sup> .....	53	4.3	18.9	3	1
29-1020	Dentists <sup>1</sup> .....	150	4.0	16.8	6	3
29-1021	Dentists, general <sup>1</sup> .....	128	4.0	16.8	5	2
29-1022	Oral and maxillofacial surgeons <sup>1</sup> .....	6	4.0	16.8	( <sup>2</sup> )	( <sup>2</sup> )
29-1023	Orthodontists <sup>1</sup> .....	10	4.0	16.8	( <sup>2</sup> )	( <sup>2</sup> )
29-1024	Prosthodontists <sup>1</sup> .....	1	4.0	16.8	( <sup>2</sup> )	( <sup>2</sup> )
29-1029	Dentists, all other specialists <sup>1</sup> .....	5	4.0	16.8	( <sup>2</sup> )	( <sup>2</sup> )

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
			Total, 2003-4	Net, 2004-14	Total	Net
29-1031	Dietitians and nutritionists .....	50	6.6	26.1	4	1
29-1041	Optometrists <sup>1</sup> .....	34	4.0	27.7	1	1
29-1051	Pharmacists.....	230	4.0	19.4	10	4
29-1060	Physicians and surgeons .....	567	4.3	13.4	27	8
29-1071	Physician assistants .....	62	9.3	15.4	7	1
29-1081	Podiatrists <sup>1</sup> .....	10	4.3	24.3	( <sup>2</sup> )	( <sup>2</sup> )
29-1111	Registered nurses .....	2,394	5.8	20.9	159	50
29-1120	Therapists.....	509	4.0	19.5	23	10
29-1121	Audiologists <sup>1</sup> .....	10	3.2	24.2	( <sup>2</sup> )	( <sup>2</sup> )
29-1122	Occupational therapists.....	92	3.4	13.5	4	1
29-1123	Physical therapists .....	155	4.0	9.8	7	2
29-1124	Radiation therapists <sup>1</sup> .....	15	3.2	22.8	1	( <sup>2</sup> )
29-1125	Recreational therapists.....	24	10.1	23.9	2	1
29-1126	Respiratory therapists <sup>1</sup> .....	94	4.0	32.9	4	3
29-1127	Speech-language pathologists <sup>1</sup> .....	96	3.2	24.9	3	2
29-1129	Therapists, all other .....	24	5.1	21.7	1	1
29-1131	Veterinarians .....	61	10.2	24.1	7	1
29-1199	Health diagnosing and treating practitioners, all other <sup>1</sup> .....	72	5.9	21.7	5	2
29-2000	Health technologists and technicians .....	2,494	7.7	17.9	214	45
29-2010	Clinical laboratory technologists and technicians .....	302	6.2	27.0	21	8
29-2011	Medical and clinical laboratory technologists .....	156	6.2	27.0	11	4
29-2012	Medical and clinical laboratory technicians .....	147	6.2	27.0	10	4
29-2021	Dental hygienists .....	158	5.5	8.5	11	1
29-2030	Diagnostic related technologists and technicians.....	287	6.3	18.7	20	5
29-2031	Cardiovascular technologists and technicians .....	45	6.3	18.7	3	1
29-2032	Diagnostic medical sonographers .....	42	6.3	18.7	3	1
29-2033	Nuclear medicine technologists.....	18	6.3	18.7	1	( <sup>2</sup> )
29-2034	Radiologic technologists and technicians.....	182	6.3	18.7	13	3
29-2041	Emergency medical technicians and paramedics .....	192	7.2	11.5	16	2
29-2050	Health diagnosing and treating practitioner support technicians .....	514	9.5	13.0	55	7
29-2051	Dietetic technicians .....	25	9.5	13.0	3	( <sup>2</sup> )
29-2052	Pharmacy technicians .....	258	9.5	13.0	28	3
29-2053	Psychiatric technicians .....	61	9.5	13.0	6	1
29-2054	Respiratory therapy technicians .....	25	9.5	13.0	2	( <sup>2</sup> )
29-2055	Surgical technologists .....	84	9.5	13.0	9	1
29-2056	Veterinary technologists and technicians .....	60	9.5	13.0	7	1
29-2061	Licensed practical and licensed vocational nurses .....	726	9.1	21.8	71	16
29-2071	Medical records and health information technicians ..	159	5.4	14.3	10	2
29-2081	Opticians, dispensing .....	66	7.4	17.5	5	1
29-2090	Miscellaneous health technologists and technicians ..	91	5.9	18.0	6	2
29-2091	Orthotists and prosthetists.....	6	5.9	16.2	( <sup>2</sup> )	( <sup>2</sup> )
29-2099	Healthcare technologists and technicians, all other ..	85	5.9	18.1	6	2
29-9000	Other healthcare practitioners and technical occupations <sup>1</sup> .....	121	6.2	20.1	8	2
29-9010	Occupational health and safety specialists and technicians <sup>1</sup> .....	51	6.2	21.7	3	1
29-9011	Occupational health and safety specialists <sup>1</sup> .....	40	6.2	21.7	3	1
29-9012	Occupational health and safety technicians <sup>1</sup> .....	12	6.2	21.7	1	( <sup>2</sup> )
29-9090	Miscellaneous health practitioners and technical workers <sup>1</sup> .....	70	6.2	18.9	5	1
29-9091	Athletic trainers <sup>1</sup> .....	15	6.2	21.7	1	( <sup>2</sup> )
29-9099	Healthcare practitioners and technical workers, all other <sup>1</sup> .....	55	6.2	18.1	4	1
<b>31-3900</b>	<b>Service occupations .....</b>	<b>27,673</b>	<b>21.6</b>	<b>28.7</b>	<b>6,541</b>	<b>795</b>
31-0000	Healthcare support occupations.....	3,492	15.3	15.8	624	55
31-1000	Nursing, psychiatric, and home health aides.....	2,139	16.9	13.1	419	28
31-1011	Home health aides .....	624	16.9	13.1	135	8
31-1012	Nursing aides, orderlies, and attendants.....	1,455	16.9	13.1	274	19
31-1013	Psychiatric aides .....	59	16.9	13.1	10	1
31-2000	Occupational and physical therapist assistants and aides .....	128	6.4	15.8	10	2
31-2010	Occupational therapist assistants and aides .....	27	5.4	12.7	2	( <sup>2</sup> )
31-2011	Occupational therapist assistants.....	21	5.4	12.7	1	( <sup>2</sup> )

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
			Total, 2003-4	Net, 2004-14	Total	Net
31-2012	Occupational therapist aides .....	5	5.4	12.7	( <sup>2</sup> )	( <sup>2</sup> )
31-2020	Physical therapist assistants and aides .....	101	6.6	16.7	8	2
31-2021	Physical therapist assistants .....	59	6.6	16.7	5	1
31-2022	Physical therapist aides .....	43	6.6	16.7	3	1
31-9000	Other healthcare support occupations .....	1,225	13.5	20.6	195	25
31-9011	Massage therapists .....	97	8.8	19.4	10	2
31-9090	Miscellaneous healthcare support occupations .....	1,129	13.9	20.7	185	23
31-9091	Dental assistants .....	267	10.4	28.0	34	7
31-9092	Medical assistants .....	387	15.0	18.5	73	7
31-9093	Medical equipment preparers .....	43	15.0	18.5	7	1
31-9094	Medical transcriptionists .....	105	15.0	18.5	18	2
31-9095	Pharmacy aides .....	50	15.0	18.5	8	1
31-9096	Veterinary assistants and laboratory animal caretakers .....	74	15.0	18.5	12	1
31-9099	Healthcare support workers, all other .....	202	15.0	18.5	33	4
33-0000	Protective service occupations .....	3,138	14.4	28.3	484	89
33-1000	First-line supervisors/managers, protective service workers .....	243	6.3	32.8	16	8
33-1010	First-line supervisors/managers, law enforcement workers .....	138	6.3	32.0	9	4
33-1011	First-line supervisors/managers of correctional officers .....	38	5.3	29.5	2	1
33-1012	First-line supervisors/managers of police and detectives .....	100	6.7	33.0	7	3
33-1021	First-line supervisors/managers of fire fighting and prevention workers <sup>1</sup> .....	56	4.6	41.2	3	2
33-1099	First-line supervisors/managers, protective service workers, all other .....	50	8.4	25.4	4	1
33-2000	Fire fighting and prevention workers .....	297	4.6	29.0	15	9
33-2011	Fire fighters .....	282	4.6	29.0	15	8
33-2020	Fire inspectors .....	15	3.6	28.5	1	( <sup>2</sup> )
33-2021	Fire inspectors and investigators .....	13	3.6	28.5	( <sup>2</sup> )	( <sup>2</sup> )
33-2022	Forest fire inspectors and prevention specialists .....	2	3.6	28.5	( <sup>2</sup> )	( <sup>2</sup> )
33-3000	Law enforcement workers .....	1,199	7.8	23.9	100	29
33-3010	Bailiffs, correctional officers, and jailers .....	447	11.6	20.7	53	9
33-3011	Bailiffs .....	18	11.6	20.7	2	( <sup>2</sup> )
33-3012	Correctional officers and jailers .....	429	11.6	20.7	51	9
33-3021	Detectives and criminal investigators <sup>1</sup> .....	91	7.5	26.8	7	2
33-3031	Fish and game wardens <sup>1</sup> .....	7	7.5	25.0	1	( <sup>2</sup> )
33-3041	Parking enforcement workers <sup>1</sup> .....	11	7.5	18.6	1	( <sup>2</sup> )
33-3050	Police officers .....	644	5.4	25.8	37	17
33-3051	Police and sheriff's patrol officers .....	639	5.4	25.9	37	17
33-3052	Transit and railroad police <sup>1</sup> .....	5	5.3	18.9	( <sup>2</sup> )	( <sup>2</sup> )
33-9000	Other protective service workers .....	1,399	23.6	31.1	353	43
33-9011	Animal control workers <sup>1</sup> .....	15	22.7	69.8	4	1
33-9021	Private detectives and investigators .....	43	13.4	21.1	6	1
33-9030	Security guards and gaming surveillance officers .....	1,025	20.1	21.8	219	22
33-9031	Gaming surveillance officers and gaming investigators .....	9	20.1	21.8	2	( <sup>2</sup> )
33-9032	Security guards .....	1,016	20.1	21.8	217	22
33-9090	Miscellaneous protective service workers .....	316	36.4	60.9	124	19
33-9091	Crossing guards .....	71	31.8	32.2	25	2
33-9092	Lifeguards, ski patrol, and other recreational protective service workers .....	113	37.7	69.3	47	8
33-9099	Protective service workers, all other .....	131	37.7	69.3	52	9
35-0000	Food preparation and serving related occupations .....	10,739	27.8	39.7	3,223	427
35-1000	Supervisors, food preparation and serving workers .....	898	18.8	24.6	183	22
35-1011	Chefs and head cooks .....	125	6.7	29.6	9	4
35-1012	First-line supervisors/managers of food preparation and serving workers .....	773	20.8	23.8	174	18
35-2000	Cooks and food preparation workers .....	3,011	24.5	32.3	792	97
35-2010	Cooks .....	2,122	22.8	31.0	516	66
35-2011	Cooks, fast food .....	662	22.8	31.0	164	21
35-2012	Cooks, institution and cafeteria .....	424	22.8	31.0	98	13

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
			Total, 2003-4	Net, 2004-14	Total	Net
35-2013	Cooks, private household .....	9	22.8	31.0	2	( <sup>2</sup> )
35-2014	Cooks, restaurant .....	783	22.8	31.0	194	24
35-2015	Cooks, short order .....	230	22.8	31.0	56	7
35-2019	Cooks, all other .....	13	22.8	31.1	3	( <sup>2</sup> )
35-2021	Food preparation workers .....	889	28.3	35.4	276	31
35-3000	Food and beverage serving workers .....	5,530	29.8	47.8	1,786	264
35-3011	Bartenders .....	474	14.8	39.5	75	19
35-3020	Fast food and counter workers .....	2,614	31.9	47.2	905	123
35-3021	Combined food preparation and serving workers, including fast food .....	2,150	30.6	43.3	714	93
35-3022	Counter attendants, cafeteria, food concession, and coffee shop .....	465	37.9	65.3	191	30
35-3031	Waiters and waitresses .....	2,252	31.3	51.5	763	116
35-3041	Food servers, nonrestaurant .....	189	21.7	33.5	43	6
35-9000	Other food preparation and serving related workers .....	1,301	32.9	33.0	462	43
35-9011	Dining room and cafeteria attendants and bartender helpers .....	401	38.8	33.4	168	13
35-9021	Dishwashers .....	507	28.6	33.8	156	17
35-9031	Hosts and hostesses, restaurant, lounge, and coffee shop <sup>1</sup> .....	328	31.3	31.8	111	10
35-9099	Food preparation and serving related workers, all other <sup>1</sup> .....	64	39.0	31.1	27	2
37-0000	Building and grounds cleaning and maintenance occupations .....	5,582	17.4	20.0	1,055	111
37-1000	Supervisors, building and grounds cleaning and maintenance workers .....	420	5.9	17.3	27	7
37-1011	First-line supervisors/managers of housekeeping and janitorial workers .....	236	6.3	23.6	16	6
37-1012	First-line supervisors/managers of landscaping, lawn service, and groundskeeping workers .....	184	5.5	9.3	11	2
37-2000	Building cleaning and pest control workers .....	3,879	18.8	19.7	788	76
37-2010	Building cleaning workers .....	3,811	19.1	19.7	785	75
37-2011	Janitors and cleaners, except maids and housekeeping cleaners .....	2,374	18.7	19.0	484	45
37-2012	Maids and housekeeping cleaners .....	1,422	19.8	21.0	298	30
37-2019	Building cleaning workers, all other .....	15	18.7	20.5	3	( <sup>2</sup> )
37-2021	Pest control workers .....	68	3.6	15.1	3	1
37-3000	Grounds maintenance workers .....	1,283	17.0	21.7	240	28
37-3010	Grounds maintenance workers .....	1,283	17.0	21.7	240	28
37-3011	Landscaping and groundskeeping workers .....	1,177	17.0	21.8	220	26
37-3012	Pesticide handlers, sprayers, and applicators, vegetation .....	30	17.0	21.8	5	1
37-3013	Tree trimmers and pruners .....	55	17.0	21.8	10	1
37-3019	Grounds maintenance workers, all other .....	21	17.0	20.5	4	( <sup>2</sup> )
39-0000	Personal care and service occupations .....	4,721	22.1	23.9	1,155	113
39-1000	Supervisors, personal care and service workers .....	267	9.8	24.2	28	6
39-1010	First-line supervisors/managers of gaming workers .....	61	18.2	21.0	12	1
39-1011	Gaming supervisors .....	38	18.2	21.0	7	1
39-1012	Slot key persons .....	23	18.2	21.0	5	( <sup>2</sup> )
39-1021	First-line supervisors/managers of personal service workers .....	206	7.3	25.1	16	5
39-2000	Animal care and service workers .....	172	15.5	23.8	30	4
39-2011	Animal trainers .....	44	3.7	20.6	2	1
39-2021	Nonfarm animal caretakers .....	128	19.4	24.9	28	3
39-3000	Entertainment attendants and related workers .....	558	34.6	35.6	215	20
39-3010	Gaming services workers .....	116	9.1	31.4	12	4
39-3011	Gaming dealers .....	83	9.1	31.6	9	3
39-3012	Gaming and sports book writers and runners .....	18	9.1	31.6	2	1
39-3019	Gaming service workers, all other .....	15	9.1	30.4	2	( <sup>2</sup> )
39-3021	Motion picture projectionists <sup>1</sup> .....	12	37.4	51.7	4	1
39-3031	Ushers, lobby attendants, and ticket takers <sup>1</sup> .....	112	37.4	57.0	44	6
39-3090	Miscellaneous entertainment attendants and related workers .....	318	43.0	29.0	154	9
39-3091	Amusement and recreation attendants .....	252	43.0	28.8	123	7

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
			Total, 2003-4	Net, 2004-14	Total	Net
39-3092	Costume attendants .....	4	43.0	28.8	2	( <sup>2</sup> )
39-3093	Locker room, coatroom, and dressing room attendants .....	25	43.0	28.8	12	1
39-3099	Entertainment attendants and related workers, all other .....	38	43.0	30.4	18	1
39-4000	Funeral service workers <sup>1</sup> .....	38	22.5	20.9	9	1
39-4011	Embalmers <sup>1</sup> .....	9	22.5	20.9	2	( <sup>2</sup> )
39-4021	Funeral attendants <sup>1</sup> .....	30	22.5	20.9	7	1
39-5000	Personal appearance workers .....	790	8.9	19.9	75	16
39-5010	Barbers and cosmetologists .....	670	7.5	20.1	54	13
39-5011	Barbers .....	60	7.9	28.1	5	2
39-5012	Hairdressers, hairstylists, and cosmetologists .....	610	7.4	19.3	49	12
39-5090	Miscellaneous personal appearance workers .....	120	16.6	19.4	22	2
39-5091	Makeup artists, theatrical and performance .....	2	16.6	19.4	( <sup>2</sup> )	( <sup>2</sup> )
39-5092	Manicurists and pedicurists .....	60	16.6	19.4	11	1
39-5093	Shampooers .....	27	16.6	19.4	5	1
39-5094	Skin care specialists .....	30	16.6	19.4	6	1
39-6000	Transportation, tourism, and lodging attendants .....	248	6.8	19.3	18	5
39-6010	Baggage porters, bellhops, and concierges .....	75	7.0	26.4	6	2
39-6011	Baggage porters and bellhops .....	57	7.0	26.4	4	1
39-6012	Concierges .....	18	7.0	26.4	1	( <sup>2</sup> )
39-6020	Tour and travel guides .....	44	11.2	26.5	5	1
39-6021	Tour guides and escorts .....	38	11.2	26.5	5	1
39-6022	Travel guides .....	6	11.2	26.5	1	( <sup>2</sup> )
39-6030	Transportation attendants .....	130	5.2	12.8	7	2
39-6031	Flight attendants .....	102	5.2	12.8	6	1
39-6032	Transportation attendants, except flight attendants and baggage porters .....	28	5.2	12.8	2	( <sup>2</sup> )
39-9000	Other personal care and service workers .....	2,648	26.4	23.1	779	61
39-9011	Child care workers .....	1,280	30.8	27.2	421	35
39-9021	Personal and home care aides .....	701	23.8	16.0	201	11
39-9030	Recreation and fitness workers .....	514	19.0	22.9	108	12
39-9031	Fitness trainers and aerobics instructors .....	205	19.0	22.9	44	5
39-9032	Recreation workers .....	310	19.0	22.9	64	7
39-9041	Residential advisors .....	56	31.3	21.1	20	1
39-9099	Personal care and service workers, all other .....	96	27.2	21.5	28	2
<b>41-0000</b>	<b>Sales and related occupations .....</b>	<b>15,330</b>	<b>22.3</b>	<b>32.2</b>	<b>3,585</b>	<b>493</b>
41-1000	Supervisors, sales workers .....	2,183	11.7	18.2	260	40
41-1011	First-line supervisors/managers of retail sales workers .....	1,667	13.1	18.0	223	30
41-1012	First-line supervisors/managers of non-retail sales workers .....	516	7.1	18.9	37	10
41-2000	Retail sales workers .....	8,445	29.5	41.3	2,632	349
41-2010	Cashiers .....	3,499	34.1	48.7	1,211	170
41-2011	Cashiers, except gaming .....	3,470	34.1	48.7	1,201	169
41-2012	Gaming change persons and booth cashiers .....	29	34.1	48.7	11	1
41-2020	Counter and rental clerks and parts salespersons .....	690	19.6	34.9	144	24
41-2021	Counter and rental clerks .....	451	23.1	38.3	116	17
41-2022	Parts salespersons .....	239	12.0	28.6	28	7
41-2031	Retail salespersons .....	4,256	27.6	36.4	1,276	155
41-3000	Sales representatives, services .....	1,318	11.2	19.2	156	25
41-3011	Advertising sales agents .....	154	12.9	19.4	22	3
41-3021	Insurance sales agents .....	400	10.0	23.9	41	10
41-3031	Securities, commodities, and financial services sales agents .....	281	11.5	11.3	34	3
41-3041	Travel agents .....	103	4.5	22.4	4	2
41-3099	Sales representatives, services, all other .....	380	13.0	19.0	54	7
41-4000	Sales representatives, wholesale and manufacturing .....	1,851	9.7	26.3	192	49
41-4011	Sales representatives, wholesale and manufacturing, technical and scientific products .....	397	9.7	26.3	41	10
41-4012	Sales representatives, wholesale and manufacturing, except technical and scientific products .....	1,454	9.7	26.3	150	38
41-9000	Other sales and related workers .....	1,533	22.1	20.0	347	31
41-9010	Models, demonstrators, and product promoters .....	120	23.5	22.2	31	3

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation	Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
		Total, 2003-4	Net, 2004-14	Total	Net
41-9011 Demonstrators and product promoters.....	118	23.5	22.2	30	3
41-9012 Models.....	2	23.5	22.2	1	( <sup>2</sup> )
41-9020 Real estate brokers and sales agents.....	460	9.7	19.9	48	9
41-9021 Real estate brokers.....	111	9.7	19.9	11	2
41-9022 Real estate sales agents.....	348	9.7	19.9	36	7
41-9031 Sales engineers <sup>1</sup> .....	74	9.1	29.8	7	2
41-9041 Telemarketers.....	415	39.6	16.4	156	7
41-9090 Miscellaneous sales and related workers.....	465	22.1	21.4	105	10
41-9091 Door-to-door sales workers, news and street vendors, and related workers.....	239	24.3	23.6	56	6
41-9099 Sales and related workers, all other.....	226	20.0	19.0	49	4
<b>43-0000 Office and administrative support occupations.....</b>	<b>23,907</b>	<b>16.2</b>	<b>22.8</b>	<b>3,988</b>	<b>545</b>
43-1000 Supervisors, office and administrative support workers.....	1,482	10.0	21.5	155	32
43-1011 First-line supervisors/managers of office and administrative support workers.....	1,482	10.0	21.5	155	32
43-2000 Communications equipment operators.....	256	15.8	25.6	38	7
43-2011 Switchboard operators, including answering service.....	213	16.9	25.6	34	5
43-2021 Telephone operators.....	39	9.2	25.9	3	1
43-2099 Communications equipment operators, all other <sup>1</sup> .....	4	16.4	21.4	1	( <sup>2</sup> )
43-3000 Financial clerks.....	3,891	14.1	23.6	571	92
43-3011 Bill and account collectors.....	456	14.8	18.8	75	9
43-3021 Billing and posting clerks and machine operators.....	523	12.8	17.0	68	9
43-3031 Bookkeeping, accounting, and auditing clerks.....	2,046	13.3	18.7	279	38
43-3041 Gaming cage workers.....	20	6.7	48.7	1	1
43-3051 Payroll and timekeeping clerks.....	214	14.1	26.4	33	6
43-3061 Procurement clerks <sup>1</sup> .....	74	13.9	25.4	10	2
43-3071 Tellers.....	558	18.0	49.3	104	27
43-4000 Information and record clerks.....	5,554	19.5	21.0	1,148	117
43-4011 Brokerage clerks <sup>1</sup> .....	75	21.4	13.3	17	1
43-4021 Correspondence clerks <sup>1</sup> .....	23	21.4	29.7	5	1
43-4031 Court, municipal, and license clerks.....	110	9.4	22.2	11	2
43-4041 Credit authorizers, checkers, and clerks.....	67	10.2	19.2	5	1
43-4051 Customer service representatives.....	2,063	20.1	14.9	463	31
43-4061 Eligibility interviewers, government programs.....	98	10.9	26.7	10	3
43-4071 File clerks.....	255	23.8	29.7	50	8
43-4081 Hotel, motel, and resort desk clerks.....	195	27.7	44.9	59	9
43-4111 Interviewers, except eligibility and loan.....	199	16.9	25.8	38	5
43-4121 Library assistants, clerical.....	109	21.2	40.5	24	4
43-4131 Loan interviewers and clerks.....	218	16.3	13.7	36	3
43-4141 New accounts clerks.....	98	7.2	25.1	7	2
43-4151 Order clerks.....	293	18.5	22.5	48	7
43-4161 Human resources assistants, except payroll and timekeeping.....	172	13.6	21.5	25	4
43-4171 Receptionists and information clerks.....	1,133	21.8	24.6	274	28
43-4181 Reservation and transportation ticket agents and travel clerks.....	163	18.1	26.1	30	4
43-4199 Information and record clerks, all other.....	285	16.8	15.7	46	4
43-5000 Material recording, scheduling, dispatching, and distributing occupations.....	3,849	15.9	29.3	605	113
43-5011 Cargo and freight agents <sup>1</sup> .....	70	16.9	22.5	12	2
43-5021 Couriers and messengers.....	147	17.1	22.9	24	3
43-5030 Dispatchers.....	266	10.4	21.5	29	6
43-5031 Police, fire, and ambulance dispatchers.....	95	10.4	21.5	11	2
43-5032 Dispatchers, except police, fire, and ambulance.....	171	10.4	21.5	18	4
43-5041 Meter readers, utilities.....	50	20.6	31.5	8	2
43-5050 Postal service workers.....	619	5.5	29.1	34	18
43-5051 Postal service clerks <sup>1</sup> .....	75	5.5	26.4	4	2
43-5052 Postal service mail carriers.....	335	5.8	31.3	19	11
43-5053 Postal service mail sorters, processors, and processing machine operators.....	209	5.1	26.4	11	6
43-5061 Production, planning, and expediting clerks.....	292	7.3	24.2	22	7
43-5071 Shipping, receiving, and traffic clerks.....	751	15.4	20.5	118	15
43-5081 Stock clerks and order fillers.....	1,566	23.3	37.0	351	58

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation	Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
		Total, 2003-4	Net, 2004-14	Total	Net
43-5111 Weighers, measurers, checkers, and samplers, recordkeeping .....	88	8.7	25.3	7	2
43-6000 Secretaries and administrative assistants .....	4,126	12.1	19.2	515	79
43-6011 Executive secretaries and administrative assistants .....	1,547	12.1	19.2	199	30
43-6012 Legal secretaries .....	272	12.1	19.2	36	5
43-6013 Medical secretaries .....	373	12.1	19.2	49	7
43-6014 Secretaries, except legal, medical, and executive .....	1,934	12.1	19.2	231	37
43-9000 Other office and administrative support workers .....	4,748	19.8	22.3	956	106
43-9011 Computer operators .....	149	10.2	21.3	13	3
43-9020 Data entry and information processing workers .....	525	22.6	23.0	115	12
43-9021 Data entry keyers .....	330	25.9	23.6	85	8
43-9022 Word processors and typists .....	194	16.6	22.0	30	4
43-9031 Desktop publishers <sup>1</sup> .....	34	20.0	22.6	7	1
43-9041 Insurance claims and policy processing clerks .....	251	13.4	16.1	34	4
43-9051 Mail clerks and mail machine operators, except postal service.....	160	25.3	29.9	33	5
43-9061 Office clerks, general.....	3,138	20.5	22.1	669	69
43-9071 Office machine operators, except computer.....	100	21.2	25.2	19	3
43-9081 Proofreaders and copy markers <sup>1</sup> .....	23	20.0	20.5	5	( <sup>2</sup> )
43-9111 Statistical assistants .....	19	6.7	16.0	1	( <sup>2</sup> )
43-9199 Office and administrative support workers, all other .....	349	16.4	23.6	60	8
<b>45-0000 Farming, fishing, and forestry occupations.....</b>	<b>1,026</b>	<b>19.1</b>	<b>27.0</b>	<b>194</b>	<b>28</b>
45-1000 Supervisors, farming, fishing, and forestry workers <sup>1</sup> .....	61	17.8	22.9	11	1
45-2000 Agricultural workers .....	834	19.3	27.9	160	23
45-2011 Agricultural inspectors <sup>1</sup> .....	14	18.7	24.3	3	( <sup>2</sup> )
45-2021 Animal breeders .....	12	8.3	16.7	1	( <sup>2</sup> )
45-2041 Graders and sorters, agricultural products .....	45	8.7	26.5	4	1
45-2090 Miscellaneous agricultural workers .....	764	20.1	28.3	152	22
45-2091 Agricultural equipment operators.....	60	20.1	28.3	12	2
45-2092 Farmworkers and laborers, crop, nursery, and greenhouse .....	611	20.1	28.3	121	17
45-2093 Farmworkers, farm and ranch animals.....	79	20.1	28.3	16	2
45-2099 Agricultural workers, all other .....	14	20.1	24.1	3	( <sup>2</sup> )
45-3000 Fishing and hunting workers .....	39	18.1	29.3	7	1
45-3011 Fishers and related fishing workers.....	38	18.1	28.5	6	1
45-3021 Hunters and trappers <sup>1</sup> .....	1	16.9	57.9	( <sup>2</sup> )	( <sup>2</sup> )
45-4000 Forest, conservation, and logging workers.....	92	18.7	20.0	17	2
45-4011 Forest and conservation workers .....	17	11.3	24.6	2	( <sup>2</sup> )
45-4020 Logging workers .....	75	20.4	19.0	15	1
45-4021 Fallers.....	15	20.4	18.4	3	( <sup>2</sup> )
45-4022 Logging equipment operators.....	43	20.4	18.4	9	1
45-4023 Log graders and scalers.....	9	20.4	18.4	2	( <sup>2</sup> )
45-4029 Logging workers, all other .....	7	20.4	24.1	1	( <sup>2</sup> )
<b>47-0000 Construction and extraction occupations .....</b>	<b>7,738</b>	<b>13.6</b>	<b>19.7</b>	<b>1,116</b>	<b>152</b>
47-1000 Supervisors, construction and extraction workers.....	750	6.1	17.0	48	13
47-1011 First-line supervisors/managers of construction trades and extraction workers.....	750	6.1	17.0	48	13
47-2000 Construction trades and related workers.....	5,929	14.3	18.3	899	109
47-2011 Boilermakers .....	19	7.7	36.4	2	1
47-2020 Brickmasons, blockmasons, and stonemasons .....	177	9.2	14.9	17	3
47-2021 Brickmasons and blockmasons .....	155	9.2	14.9	15	2
47-2022 Stonemasons .....	22	9.2	14.9	2	( <sup>2</sup> )
47-2031 Carpenters.....	1,349	13.3	16.3	192	22
47-2040 Carpet, floor, and tile installers and finishers.....	184	12.1	15.6	24	3
47-2041 Carpet installers .....	79	12.1	15.6	10	1
47-2042 Floor layers, except carpet, wood, and hard tiles.....	31	12.1	15.6	4	( <sup>2</sup> )
47-2043 Floor sanders and finishers .....	15	12.1	15.6	2	( <sup>2</sup> )
47-2044 Tile and marble setters .....	59	12.1	15.6	8	1
47-2050 Cement masons, concrete finishers, and terrazzo workers .....	208	13.2	20.1	30	4
47-2051 Cement masons and concrete finishers .....	201	13.2	20.1	29	4
47-2053 Terrazzo workers and finishers.....	7	13.2	20.1	1	( <sup>2</sup> )

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
			Total, 2003-4	Net, 2004-14	Total	Net
47-2061	Construction laborers .....	1,009	23.0	13.3	239	13
47-2070	Construction equipment operators .....	449	8.1	24.0	38	11
47-2071	Paving, surfacing, and tamping equipment operators <sup>1</sup> .....	63	8.1	14.3	6	1
47-2072	Pile-driver operators <sup>1</sup> .....	4	8.1	16.9	( <sup>2</sup> )	( <sup>2</sup> )
47-2073	Operating engineers and other construction equipment operators .....	382	8.1	25.7	33	10
47-2080	Drywall installers, ceiling tile installers, and tapers .....	196	10.0	21.7	20	4
47-2081	Drywall and ceiling tile installers .....	149	10.0	21.7	16	3
47-2082	Tapers .....	47	10.0	21.7	5	1
47-2111	Electricians .....	656	8.7	19.8	61	13
47-2121	Glaziers <sup>1</sup> .....	49	15.1	20.9	8	1
47-2130	Insulation workers .....	61	9.1	30.2	6	2
47-2131	Insulation workers, floor, ceiling, and wall .....	42	9.1	30.2	4	1
47-2132	Insulation workers, mechanical .....	19	9.1	30.2	2	1
47-2140	Painters and paperhangers .....	486	19.1	15.2	99	7
47-2141	Painters, construction and maintenance .....	471	19.1	15.2	96	7
47-2142	Paperhangers <sup>1</sup> .....	14	19.0	12.7	3	( <sup>2</sup> )
47-2150	Pipelayers, plumbers, pipefitters, and steamfitters .....	561	10.0	23.0	60	13
47-2151	Pipelayers .....	62	10.0	23.0	7	1
47-2152	Plumbers, pipefitters, and steamfitters .....	499	10.0	23.0	54	11
47-2161	Plasterers and stucco masons .....	59	8.1	18.3	5	1
47-2171	Reinforcing iron and rebar workers <sup>1</sup> .....	34	15.1	19.4	5	1
47-2181	Roofers .....	162	20.1	23.3	35	4
47-2211	Sheet metal workers .....	198	22.5	24.0	47	5
47-2221	Structural iron and steel workers .....	73	15.6	19.6	12	1
47-3000	Helpers, construction trades .....	431	19.5	41.5	89	18
47-3010	Helpers, construction trades .....	431	19.5	41.5	89	18
47-3011	Helpers—brickmasons, blockmasons, stonemasons, and tile and marble setters .....	62	19.5	41.5	13	3
47-3012	Helpers—carpenters .....	109	19.5	41.5	23	5
47-3013	Helpers—electricians .....	95	19.5	41.5	19	4
47-3014	Helpers—painters, paperhangers, plasterers, and stucco masons .....	27	19.5	41.5	6	1
47-3015	Helpers—pipelayers, plumbers, pipefitters, and steamfitters .....	76	19.5	41.5	16	3
47-3016	Helpers—roofers .....	22	19.5	41.5	5	1
47-3019	Helpers, construction trades, all other .....	39	19.5	41.5	8	2
47-4000	Other construction and related workers .....	460	10.7	18.7	55	9
47-4011	Construction and building inspectors .....	94	4.0	22.5	4	2
47-4021	Elevator installers and repairers <sup>1</sup> .....	22	10.8	24.7	3	1
47-4031	Fence erectors <sup>1</sup> .....	38	10.8	14.8	4	1
47-4041	Hazardous materials removal workers .....	38	23.2	26.4	10	1
47-4051	Highway maintenance workers .....	143	14.6	14.5	23	2
47-4061	Rail-track laying and maintenance equipment operators .....	11	7.5	22.6	1	( <sup>2</sup> )
47-4071	Septic tank servicers and sewer pipe cleaners <sup>1</sup> .....	20	10.8	26.7	2	1
47-4090	Miscellaneous construction and related workers .....	94	6.4	16.0	7	1
47-4091	Segmental pavers .....	1	6.4	16.0	( <sup>2</sup> )	( <sup>2</sup> )
47-4099	Construction and related workers, all other .....	92	6.4	16.0	7	1
47-5000	Extraction workers .....	169	14.7	27.2	25	5
47-5010	Derrick, rotary drill, and service unit operators, oil, gas, and mining .....	47	8.1	29.0	4	1
47-5011	Derrick operators, oil and gas .....	15	8.1	29.0	1	( <sup>2</sup> )
47-5012	Rotary drill operators, oil and gas .....	15	8.1	29.0	1	( <sup>2</sup> )
47-5013	Service unit operators, oil, gas, and mining .....	17	8.1	29.0	1	1
47-5021	Earth drillers, except oil and gas .....	22	18.4	21.1	4	( <sup>2</sup> )
47-5031	Explosives workers, ordnance handling experts, and blasters <sup>1</sup> .....	5	16.3	38.1	1	( <sup>2</sup> )
47-5040	Mining machine operators .....	15	7.8	28.4	1	( <sup>2</sup> )
47-5041	Continuous mining machine operators .....	8	7.8	28.4	1	( <sup>2</sup> )
47-5042	Mine cutting and channeling machine operators .....	4	7.8	28.4	( <sup>2</sup> )	( <sup>2</sup> )
47-5049	Mining machine operators, all other .....	3	7.8	28.4	( <sup>2</sup> )	( <sup>2</sup> )
47-5051	Rock splitters, quarry .....	3	28.4	24.7	1	( <sup>2</sup> )
47-5061	Roof bolters, mining <sup>1</sup> .....	4	16.3	18.2	1	( <sup>2</sup> )
47-5071	Roustabouts, oil and gas <sup>1</sup> .....	34	16.3	27.7	5	1

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
			Total, 2003-4	Net, 2004-14	Total	Net
47-5081	Helpers—extraction workers <sup>1</sup> .....	27	16.3	28.2	4	1
47-5099	Extraction workers, all other .....	12	28.4	24.7	3	( <sup>2</sup> )
<b>49-0000</b>	<b>Installation, maintenance, and repair occupations .....</b>	<b>5,747</b>	<b>10.2</b>	<b>22.9</b>	<b>618</b>	<b>132</b>
49-1000	Supervisors of installation, maintenance, and repair workers .....	469	5.4	25.1	27	12
49-1011	First-line supervisors/managers of mechanics, installers, and repairers .....	469	5.4	25.1	27	12
49-2000	Electrical and electronic equipment mechanics, installers, and repairers.....	664	13.1	19.0	89	13
49-2011	Computer, automated teller, and office machine repairers.....	168	17.5	12.2	30	2
49-2020	Radio and telecommunications equipment installers and repairers.....	222	9.9	20.7	21	5
49-2021	Radio mechanics.....	7	9.9	20.7	1	( <sup>2</sup> )
49-2022	Telecommunications equipment installers and repairers, except line installers .....	215	9.9	20.7	21	4
49-2090	Miscellaneous electrical and electronic equipment mechanics, installers, and repairers .....	275	12.9	21.8	37	6
49-2091	Avionics technicians <sup>1</sup> .....	23	7.3	24.2	2	1
49-2092	Electric motor, power tool, and related repairers.....	28	9.8	24.0	3	1
49-2093	Electrical and electronics installers and repairers, transportation equipment <sup>1</sup> .....	18	13.0	24.4	2	( <sup>2</sup> )
49-2094	Electrical and electronics repairers, commercial and industrial equipment.....	72	9.9	22.0	8	2
49-2095	Electrical and electronics repairers, powerhouse, substation, and relay <sup>1</sup> .....	21	9.9	22.0	2	( <sup>2</sup> )
49-2096	Electronic equipment installers and repairers, motor vehicles.....	19	3.4	24.2	1	( <sup>2</sup> )
49-2097	Electronic home entertainment equipment installers and repairers.....	47	13.0	19.6	6	1
49-2098	Security and fire alarm systems installers .....	47	26.5	19.1	14	1
49-3000	Vehicle and mobile equipment mechanics, installers, and repairers.....	1,778	10.4	25.9	197	46
49-3011	Aircraft mechanics and service technicians.....	119	7.3	23.6	9	3
49-3020	Automotive technicians and repairers .....	1,026	9.0	25.2	99	26
49-3021	Automotive body and related repairers.....	201	7.6	20.3	16	4
49-3022	Automotive glass installers and repairers.....	22	8.0	19.0	2	( <sup>2</sup> )
49-3023	Automotive service technicians and mechanics .....	803	9.3	26.6	80	21
49-3031	Bus and truck mechanics and diesel engine specialists .....	270	9.8	25.7	28	7
49-3040	Heavy vehicle and mobile equipment service technicians and mechanics.....	178	10.0	21.7	18	4
49-3041	Farm equipment mechanics .....	33	10.0	21.7	3	1
49-3042	Mobile heavy equipment mechanics, except engines .....	125	10.0	21.7	13	3
49-3043	Rail car repairers .....	20	10.0	21.7	2	( <sup>2</sup> )
49-3050	Small engine mechanics .....	73	27.2	24.8	21	2
49-3051	Motorboat mechanics .....	23	27.2	24.8	7	1
49-3052	Motorcycle mechanics.....	19	27.2	24.8	6	( <sup>2</sup> )
49-3053	Outdoor power equipment and other small engine mechanics.....	31	27.2	24.8	9	1
49-3090	Miscellaneous vehicle and mobile equipment mechanics, installers, and repairers .....	112	18.1	42.5	21	5
49-3091	Bicycle repairers .....	8	18.1	42.5	2	( <sup>2</sup> )
49-3092	Recreational vehicle service technicians.....	13	18.1	42.5	3	1
49-3093	Tire repairers and changers .....	91	18.1	42.5	17	4
49-9000	Other installation, maintenance, and repair occupations .....	2,837	10.2	21.5	306	61
49-9010	Control and valve installers and repairers <sup>1</sup> .....	48	9.3	25.0	5	1
49-9011	Mechanical door repairers <sup>1</sup> .....	11	9.3	25.0	1	( <sup>2</sup> )
49-9012	Control and valve installers and repairers, except mechanical door <sup>1</sup> .....	38	9.3	25.0	4	1
49-9021	Heating, air conditioning, and refrigeration mechanics and installers.....	270	9.3	13.3	27	4
49-9031	Home appliance repairers .....	50	4.8	23.8	2	1
49-9040	Industrial machinery installation, repair, and maintenance workers.....	1,700	8.7	19.7	157	33
49-9041	Industrial machinery mechanics .....	220	5.8	20.1	13	4

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
			Total, 2003-4	Net, 2004-14	Total	Net
49-9042	Maintenance and repair workers, general .....	1,332	9.4	19.2	134	26
49-9043	Maintenance workers, machinery.....	86	6.9	22.6	6	2
49-9044	Millwrights.....	59	7.0	24.3	4	1
49-9045	Refractory materials repairers, except brickmasons ..	4	5.8	20.1	( <sup>2</sup> )	( <sup>2</sup> )
49-9050	Line installers and repairers .....	251	12.5	29.1	32	7
49-9051	Electrical power-line installers and repairers.....	104	10.4	31.7	11	3
49-9052	Telecommunications line installers and repairers.....	147	13.9	27.2	21	4
49-9060	Precision instrument and equipment repairers.....	62	9.9	28.0	6	2
49-9061	Camera and photographic equipment repairers.....	5	9.9	28.0	( <sup>2</sup> )	( <sup>2</sup> )
49-9062	Medical equipment repairers .....	29	9.9	28.0	3	1
49-9063	Musical instrument repairers and tuners .....	6	9.9	28.0	1	( <sup>2</sup> )
49-9064	Watch repairers .....	4	9.9	28.0	( <sup>2</sup> )	( <sup>2</sup> )
49-9069	Precision instrument and equipment repairers, all other.....	17	9.9	28.0	2	( <sup>2</sup> )
49-9090	Miscellaneous installation, maintenance, and repair workers .....	456	15.5	27.8	75	13
49-9091	Coin, vending, and amusement machine servicers and repairers.....	46	15.9	24.2	7	1
49-9092	Commercial divers <sup>1</sup> .....	3	10.7	15.1	( <sup>2</sup> )	( <sup>2</sup> )
49-9093	Fabric menders, except garment.....	3	10.7	22.7	( <sup>2</sup> )	( <sup>2</sup> )
49-9094	Locksmiths and safe repairers <sup>1</sup> .....	28	15.9	33.5	5	1
49-9095	Manufactured building and mobile home installers ....	15	13.0	24.3	2	( <sup>2</sup> )
49-9096	Riggers <sup>1</sup> .....	13	10.7	22.8	1	( <sup>2</sup> )
49-9097	Signal and track switch repairers <sup>1</sup> .....	8	10.7	35.0	1	( <sup>2</sup> )
49-9098	Helpers--Installation, maintenance, and repair workers .....	163	21.5	33.8	38	6
49-9099	Installation, maintenance, and repair workers, all other.....	178	10.7	22.7	20	4
<b>51-0000</b>	<b>Production occupations .....</b>	<b>10,562</b>	<b>14.3</b>	<b>23.9</b>	<b>1,500</b>	<b>252</b>
51-1000	Supervisors, production workers .....	731	11.8	21.0	87	15
51-1011	First-line supervisors/managers of production and operating workers .....	731	11.8	21.0	87	15
51-2000	Assemblers and fabricators .....	1,997	18.8	25.5	382	51
51-2011	Aircraft structure, surfaces, rigging, and systems assemblers <sup>1</sup> .....	19	19.7	27.4	4	1
51-2020	Electrical, electronics, and electromechanical assemblers.....	301	15.4	23.6	44	7
51-2021	Coil winders, tapers, and finishers .....	28	15.4	23.6	4	1
51-2022	Electrical and electronic equipment assemblers .....	221	15.4	23.6	33	5
51-2023	Electromechanical equipment assemblers.....	52	15.4	23.6	8	1
51-2031	Engine and other machine assemblers .....	46	5.4	28.0	2	1
51-2041	Structural metal fabricators and fitters <sup>1</sup> .....	90	19.7	23.5	18	2
51-2090	Miscellaneous assemblers and fabricators .....	1,541	19.7	25.9	314	40
51-2091	Fiberglass laminators and fabricators .....	31	19.7	25.9	6	1
51-2092	Team assemblers .....	1,239	19.7	25.9	253	32
51-2093	Timing device assemblers, adjusters, and calibrators	3	19.7	25.9	1	( <sup>2</sup> )
51-2099	Assemblers and fabricators, all other .....	268	19.7	25.9	54	7
51-3000	Food processing occupations.....	725	14.8	22.8	114	16
51-3011	Bakers .....	166	19.3	23.2	34	4
51-3020	Butchers and other meat, poultry, and fish processing workers .....	411	13.7	21.9	60	9
51-3021	Butchers and meat cutters .....	134	13.7	21.9	19	3
51-3022	Meat, poultry, and fish cutters and trimmers.....	140	13.7	21.9	21	3
51-3023	Slaughterers and meat packers .....	136	13.7	21.9	20	3
51-3090	Miscellaneous food processing workers.....	148	12.9	24.6	20	4
51-3091	Food and tobacco roasting, baking, and drying machine operators and tenders.....	18	10.8	28.6	2	1
51-3092	Food batchmakers.....	87	16.8	24.6	15	2
51-3093	Food cooking machine operators and tenders .....	43	5.6	22.9	2	1
51-4000	Metal workers and plastic workers .....	2,175	9.7	24.2	207	53
51-4010	Computer control programmers and operators .....	143	10.6	16.5	15	2
51-4011	Computer-controlled machine tool operators, metal and plastic.....	126	10.6	16.5	13	2
51-4012	Numerical tool and process control programmers.....	18	10.6	16.5	2	( <sup>2</sup> )

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
			Total, 2003-4	Net, 2004-14	Total	Net
51-4020	Forming machine setters, operators, and tenders, metal and plastic.....	165	10.9	26.6	17	4
51-4021	Extruding and drawing machine setters, operators, and tenders, metal and plastic <sup>1</sup> .....	89	10.7	33.3	9	3
51-4022	Forging machine setters, operators, and tenders, metal and plastic.....	38	11.4	14.7	4	1
51-4023	Rolling machine setters, operators, and tenders, metal and plastic <sup>1</sup> .....	37	10.7	22.6	4	1
51-4030	Machine tool cutting setters, operators, and tenders, metal and plastic.....	495	6.4	21.9	30	11
51-4031	Cutting, punching, and press machine setters, operators, and tenders, metal and plastic.....	251	5.7	23.2	13	6
51-4032	Drilling and boring machine tool setters, operators, and tenders, metal and plastic <sup>1</sup> .....	42	5.8	29.2	2	1
51-4033	Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic.....	101	5.6	19.1	5	2
51-4034	Lathe and turning machine tool setters, operators, and tenders, metal and plastic.....	71	10.5	19.2	7	1
51-4035	Milling and planing machine setters, operators, and tenders, metal and plastic <sup>1</sup> .....	31	5.6	17.2	2	1
51-4041	Machinists .....	370	8.4	23.3	32	9
51-4050	Metal furnace and kiln operators and tenders .....	31	9.5	22.4	3	1
51-4051	Metal-refining furnace operators and tenders .....	17	9.5	22.4	2	( <sup>2</sup> )
51-4052	Pourers and casters, metal .....	14	9.5	22.4	1	( <sup>2</sup> )
51-4060	Model makers and patternmakers, metal and plastic <sup>1</sup> ...	14	11.3	31.9	2	( <sup>2</sup> )
51-4061	Model makers, metal and plastic <sup>1</sup> .....	8	11.3	31.9	1	( <sup>2</sup> )
51-4062	Patternmakers, metal and plastic <sup>1</sup> .....	6	11.3	31.9	1	( <sup>2</sup> )
51-4070	Molders and molding machine setters, operators, and tenders, metal and plastic.....	175	11.3	24.9	19	4
51-4071	Foundry mold and coremakers.....	17	11.3	24.9	2	( <sup>2</sup> )
51-4072	Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic.....	157	11.3	24.9	17	4
51-4081	Multiple machine tool setters, operators, and tenders, metal and plastic <sup>1</sup> .....	97	5.8	27.6	6	3
51-4111	Tool and die makers .....	103	6.7	22.5	7	2
51-4120	Welding, soldering, and brazing workers.....	429	13.0	28.2	57	12
51-4121	Welders, cutters, solderers, and brazers.....	377	13.0	28.2	50	11
51-4122	Welding, soldering, and brazing machine setters, operators, and tenders.....	52	13.0	28.2	7	1
51-4190	Miscellaneous metalworkers and plastic workers .....	153	14.7	25.1	22	4
51-4191	Heat treating equipment setters, operators, and tenders, metal and plastic <sup>1</sup> .....	26	12.1	31.4	3	1
51-4192	Lay-out workers, metal and plastic <sup>1</sup> .....	11	12.1	15.2	1	( <sup>2</sup> )
51-4193	Plating and coating machine setters, operators, and tenders, metal and plastic.....	40	23.9	21.8	9	1
51-4194	Tool grinders, filers, and sharpeners <sup>1</sup> .....	21	12.1	32.4	2	1
51-4199	Metal workers and plastic workers, all other .....	55	10.8	23.7	5	1
51-5000	Printing occupations .....	413	12.8	24.0	52	10
51-5010	Bookbinders and bindery workers .....	81	11.5	26.7	9	2
51-5011	Bindery workers.....	74	11.5	26.7	8	2
51-5012	Bookbinders .....	7	11.5	26.7	1	( <sup>2</sup> )
51-5020	Printers .....	332	13.1	23.3	44	8
51-5021	Job printers.....	63	11.9	23.5	8	1
51-5022	Prepress technicians and workers .....	78	13.6	23.4	10	2
51-5023	Printing machine operators .....	191	13.3	23.2	26	4
51-6000	Textile, apparel, and furnishings occupations.....	929	13.1	19.5	111	18
51-6011	Laundry and dry-cleaning workers .....	235	16.3	27.2	41	6
51-6021	Pressers, textile, garment, and related materials .....	82	16.7	15.7	14	1
51-6031	Sewing machine operators.....	256	9.7	12.4	20	3
51-6040	Shoe and leather workers <sup>1</sup> .....	15	14.4	25.8	2	( <sup>2</sup> )
51-6041	Shoe and leather workers and repairers <sup>1</sup> .....	10	16.3	31.4	2	( <sup>2</sup> )
51-6042	Shoe machine operators and tenders <sup>1</sup> .....	5	9.7	13.0	( <sup>2</sup> )	( <sup>2</sup> )
51-6050	Tailors, dressmakers, and sewers .....	85	6.6	17.4	5	1
51-6051	Sewers, hand .....	31	6.6	17.4	2	1
51-6052	Tailors, dressmakers, and custom sewers.....	54	6.6	17.4	4	1

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation	Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
		Total, 2003-4	Net, 2004-14	Total	Net
51-6060 Textile machine setters, operators, and tenders.....	148	16.8	18.0	19	3
51-6061 Textile bleaching and dyeing machine operators and tenders.....	21	21.7	25.6	4	1
51-6062 Textile cutting machine setters, operators, and tenders.....	28	5.3	22.1	1	1
51-6063 Textile knitting and weaving machine setters, operators, and tenders.....	46	16.8	11.2	6	1
51-6064 Textile winding, twisting, and drawing out machine setters, operators, and tenders.....	53	21.7	18.6	9	1
51-6090 Miscellaneous textile, apparel, and furnishings workers	109	10.1	25.5	10	3
51-6091 Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers <sup>1</sup> .....	23	9.1	19.4	2	( <sup>2</sup> )
51-6092 Fabric and apparel patternmakers <sup>1</sup> .....	9	9.1	46.7	1	( <sup>2</sup> )
51-6093 Upholsterers <sup>1</sup> .....	53	9.1	25.4	4	1
51-6099 Textile, apparel, and furnishings workers, all other.....	23	13.9	23.6	3	1
51-7000 Woodworkers.....	364	12.0	25.8	43	9
51-7011 Cabinetmakers and bench carpenters.....	148	7.3	25.1	11	4
51-7021 Furniture finishers.....	34	5.8	20.2	2	1
51-7030 Model makers and patternmakers, wood <sup>1</sup> .....	6	18.5	29.0	1	( <sup>2</sup> )
51-7031 Model makers, wood <sup>1</sup> .....	3	18.5	29.0	1	( <sup>2</sup> )
51-7032 Patternmakers, wood <sup>1</sup> .....	3	18.5	29.0	( <sup>2</sup> )	( <sup>2</sup> )
51-7040 Woodworking machine setters, operators, and tenders	150	17.1	27.0	24	4
51-7041 Sawing machine setters, operators, and tenders, wood.....	58	21.2	28.3	11	2
51-7042 Woodworking machine setters, operators, and tenders, except sawing.....	92	14.5	26.3	13	2
51-7099 Woodworkers, all other.....	26	18.5	28.9	5	1
51-8000 Plant and system operators.....	320	10.4	29.5	33	9
51-8010 Power plant operators, distributors, and dispatchers.....	47	13.7	26.9	6	1
51-8011 Nuclear power reactor operators.....	4	13.7	26.9	1	( <sup>2</sup> )
51-8012 Power distributors and dispatchers.....	8	13.7	26.9	1	( <sup>2</sup> )
51-8013 Power plant operators.....	34	13.7	26.9	5	1
51-8021 Stationary engineers and boiler operators.....	50	8.6	18.5	4	1
51-8031 Water and liquid waste treatment plant and system operators.....	94	4.8	34.4	5	3
51-8090 Miscellaneous plant and system operators.....	129	14.5	31.0	18	4
51-8091 Chemical plant and system operators.....	60	14.5	31.0	8	2
51-8092 Gas plant operators.....	11	14.5	31.0	2	( <sup>2</sup> )
51-8093 Petroleum pump system operators, refinery operators, and gaugers.....	43	14.5	31.0	6	1
51-8099 Plant and system operators, all other.....	15	14.5	31.0	2	( <sup>2</sup> )
51-9000 Other production occupations.....	2,909	16.1	24.2	469	70
51-9010 Chemical processing machine setters, operators, and tenders.....	87	11.8	32.0	10	3
51-9011 Chemical equipment operators and tenders.....	49	11.8	32.0	6	2
51-9012 Separating, filtering, clarifying, precipitating, and still machine setters, operators, and tenders.....	38	11.8	32.0	4	1
51-9020 Crushing, grinding, polishing, mixing, and blending workers.....	208	13.0	26.1	27	5
51-9021 Crushing, grinding, and polishing machine setters, operators, and tenders.....	43	13.0	26.1	6	1
51-9022 Grinding and polishing workers, hand.....	45	13.0	26.1	6	1
51-9023 Mixing and blending machine setters, operators, and tenders.....	120	13.0	26.1	16	3
51-9030 Cutting workers.....	104	8.8	20.7	9	2
51-9031 Cutters and trimmers, hand.....	29	8.8	20.7	3	1
51-9032 Cutting and slicing machine setters, operators, and tenders.....	75	8.8	20.7	6	2
51-9041 Extruding, forming, pressing, and compacting machine setters, operators, and tenders.....	74	10.4	26.3	8	2
51-9051 Furnace, kiln, oven, drier, and kettle operators and tenders.....	30	11.8	23.9	3	1
51-9061 Inspectors, testers, sorters, samplers, and weighers.....	508	17.0	22.8	85	12
51-9071 Jewelers and precious stone and metal workers.....	42	13.0	19.9	6	1
51-9080 Medical, dental, and ophthalmic laboratory technicians.	87	5.4	21.9	5	2
51-9081 Dental laboratory technicians.....	50	5.4	21.9	3	1
51-9082 Medical appliance technicians.....	11	5.4	21.9	1	( <sup>2</sup> )

See footnotes at end of table.

**Table VI-5. Total and net replacement rates and annual average replacement needs, 2004-14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation		Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004-14	
			Total, 2003-4	Net, 2004-14	Total	Net
51-9083	Ophthalmic laboratory technicians .....	25	5.4	21.9	1	1
51-9111	Packaging and filling machine operators and tenders....	412	19.1	19.9	79	8
51-9120	Painting workers .....	186	15.6	26.1	29	5
51-9121	Coating, painting, and spraying machine setters, operators, and tenders .....	103	15.6	26.1	16	3
51-9122	Painters, transportation equipment .....	53	15.6	26.1	9	1
51-9123	Painting, coating, and decorating workers .....	29	15.6	26.1	5	1
51-9130	Photographic process workers and processing machine operators .....	86	22.4	24.8	17	2
51-9131	Photographic process workers .....	32	22.4	24.8	7	1
51-9132	Photographic processing machine operators .....	54	22.4	24.8	10	1
51-9141	Semiconductor processors <sup>1</sup> .....	45	15.4	22.1	7	1
51-9190	Miscellaneous production workers .....	1,040	17.4	25.8	184	27
51-9191	Cementing and gluing machine operators and tenders <sup>1</sup> .....	25	15.8	27.3	4	1
51-9192	Cleaning, washing, and metal pickling equipment operators and tenders <sup>1</sup> .....	18	15.8	29.2	3	1
51-9193	Cooling and freezing equipment operators and tenders <sup>1</sup> .....	9	15.8	28.0	1	( <sup>2</sup> )
51-9194	Etchers and engravers <sup>1</sup> .....	12	13.6	27.5	2	( <sup>2</sup> )
51-9195	Molders, shapers, and casters, except metal and plastic <sup>1</sup> .....	47	15.8	23.8	7	1
51-9196	Paper goods machine setters, operators, and tenders .....	111	13.6	21.2	15	2
51-9197	Tire builders .....	18	22.0	23.6	4	( <sup>2</sup> )
51-9198	Helpers—production workers .....	484	20.5	28.0	103	14
51-9199	Production workers, all other .....	319	14.3	23.9	45	8
53-0000	Transportation and material moving occupations .....	10,098	17.6	22.5	1,877	227
53-1000	Supervisors, transportation and material moving workers ..	408	7.5	23.5	32	10
53-1011	Aircraft cargo handling supervisors .....	8	7.5	23.5	1	( <sup>2</sup> )
53-1021	First-line supervisors/managers of helpers, laborers, and material movers, hand .....	173	7.5	23.5	13	4
53-1031	First-line supervisors/managers of transportation and material-moving machine and vehicle operators ..	228	7.5	23.5	18	5
53-2000	Air transportation occupations .....	135	5.7	26.5	8	4
53-2010	Aircraft pilots and flight engineers .....	106	5.8	26.7	7	3
53-2011	Airline pilots, copilots, and flight engineers .....	84	5.8	26.7	5	2
53-2012	Commercial pilots .....	22	5.8	26.7	1	1
53-2020	Air traffic controllers and airfield operations specialists ..	29	5.5	25.7	2	1
53-2021	Air traffic controllers <sup>1</sup> .....	24	5.5	25.7	1	1
53-2022	Airfield operations specialists .....	5	5.5	25.7	( <sup>2</sup> )	( <sup>2</sup> )
53-3000	Motor vehicle operators .....	4,182	14.1	15.0	634	63
53-3011	Ambulance drivers and attendants, except emergency medical technicians <sup>1</sup> .....	20	18.3	10.2	4	( <sup>2</sup> )
53-3020	Bus drivers .....	653	14.0	21.8	99	14
53-3021	Bus drivers, transit and intercity .....	190	14.0	21.8	30	4
53-3022	Bus drivers, school .....	463	14.0	21.8	69	10
53-3030	Driver/sales workers and truck drivers .....	3,232	13.6	14.0	471	45
53-3031	Driver/sales workers .....	451	13.6	16.3	66	7
53-3032	Truck drivers, heavy and tractor-trailer .....	1,738	13.6	16.3	252	28
53-3033	Truck drivers, light or delivery services .....	1,042	13.6	9.2	153	10
53-3041	Taxi drivers and chauffeurs .....	188	18.3	9.2	39	2
53-3099	Motor vehicle operators, all other .....	88	21.1	14.1	21	1
53-4000	Rail transportation occupations .....	112	4.4	25.0	5	3
53-4010	Locomotive engineers and operators <sup>1</sup> .....	40	4.4	29.3	2	1
53-4021	Railroad brake, signal, and switch operators <sup>1</sup> .....	17	4.4	10.7	1	( <sup>2</sup> )
53-4031	Railroad conductors and yardmasters <sup>1</sup> .....	38	4.4	27.1	2	1
53-4041	Subway and streetcar operators <sup>1</sup> .....	9	4.4	25.0	( <sup>2</sup> )	( <sup>2</sup> )
53-4099	Rail transportation workers, all other .....	8	4.4	25.0	( <sup>2</sup> )	( <sup>2</sup> )
53-5000	Water transportation occupations .....	72	8.8	33.6	7	2
53-5011	Sailors and marine oilers .....	28	13.3	35.3	4	1
53-5020	Ship and boat captains and operators .....	32	5.9	28.5	2	1
53-5021	Captains, mates, and pilots of water vessels .....	29	5.9	28.5	2	1
53-5022	Motorboat operators .....	3	5.9	28.5	( <sup>2</sup> )	( <sup>2</sup> )

See footnotes at end of table.

**Table VI–5. Total and net replacement rates and annual average replacement needs, 2004–14 — Continued**  
(Numbers in thousands)

2004 National Employment Matrix occupation	Total employment, 2004	Replacement rate (percent)		Annual average replacement needs, 2004–14	
		Total, 2003–4	Net, 2004–14	Total	Net
53-5031 Ship engineers <sup>1</sup> .....	12	5.9	44.0	1	1
53-6000 Other transportation workers .....	301	19.4	33.9	59	10
53-6011 Bridge and lock tenders <sup>1</sup> .....	4	6.3	31.4	( <sup>2</sup> )	( <sup>2</sup> )
53-6021 Parking lot attendants .....	122	23.9	29.7	28	4
53-6031 Service station attendants .....	91	26.9	44.9	25	4
53-6041 Traffic technicians .....	6	6.3	30.1	( <sup>2</sup> )	( <sup>2</sup> )
53-6051 Transportation inspectors .....	26	6.7	23.8	2	1
53-6099 Transportation workers, all other .....	52	6.3	30.1	4	2
53-7000 Material moving occupations .....	4,887	22.2	27.8	1,132	136
53-7011 Conveyor operators and tenders .....	53	5.2	28.7	3	2
53-7021 Crane and tower operators .....	44	7.3	21.8	3	1
53-7030 Dredge, excavating, and loading machine operators .....	92	11.5	27.5	11	3
53-7031 Dredge operators .....	3	11.5	27.5	( <sup>2</sup> )	( <sup>2</sup> )
53-7032 Excavating and loading machine and dragline operators .....	86	11.5	27.5	10	2
53-7033 Loading machine operators, underground mining .....	4	11.5	27.5	( <sup>2</sup> )	( <sup>2</sup> )
53-7041 Hoist and winch operators <sup>1</sup> .....	6	8.1	31.7	( <sup>2</sup> )	( <sup>2</sup> )
53-7051 Industrial truck and tractor operators .....	635	16.5	18.9	109	12
53-7060 Laborers and material movers, hand .....	3,803	24.2	29.4	961	112
53-7061 Cleaners of vehicles and equipment .....	347	30.0	34.8	109	12
53-7062 Laborers and freight, stock, and material movers, hand .....	2,430	25.3	32.7	646	79
53-7063 Machine feeders and offbearers .....	148	15.1	27.3	20	4
53-7064 Packers and packagers, hand .....	877	20.1	18.7	186	16
53-7070 Pumping station operators .....	27	19.2	23.3	5	1
53-7071 Gas compressor and gas pumping station operators .....	5	19.2	23.3	1	( <sup>2</sup> )
53-7072 Pump operators, except wellhead pumpers .....	11	19.2	23.3	2	( <sup>2</sup> )
53-7073 Wellhead pumpers .....	11	19.2	23.3	2	( <sup>2</sup> )
53-7081 Refuse and recyclable material collectors .....	149	18.9	25.6	30	4
53-7111 Shuttle car operators <sup>1</sup> .....	3	13.6	24.9	( <sup>2</sup> )	( <sup>2</sup> )
53-7121 Tank car, truck, and ship loaders .....	17	11.8	27.9	2	( <sup>2</sup> )
53-7199 Material moving workers, all other .....	58	14.7	26.8	8	2

<sup>1</sup> One or more Current Population Survey (CPS) proxy occupations may be used to estimate CPS-based data. (See chapter IV.)

<sup>2</sup> Less than 500.

# Chapter VII. Education and Training Statistics:

## Completions, by field of study

Data on the number of awards, degrees, and certificates completed during 2003–04, by type of educational program and detailed field of study, were collected in fall 2004 through the Integrated Postsecondary Education Data System (IPEDS) Web-based data collection system of the National Center for Education Statistics (NCES), U.S. Department of Education. These data, covering the period from July 1, 2003, to June 30, 2004, are presented in table VII–1. NCES surveyed institutions of higher education that offered awards at the bachelor’s degree level and higher, institutions with 2-year programs, and public and private institutions with programs of less than 2 years. The 2000 version of the Classification of Instructional Programs was used to categorize the data.

About 3.6 million postsecondary awards and degrees were earned during the 2003–04 academic year, an increase of about 1 million, or 36 percent, from 10 years earlier. Formal degrees earned included 675,000 associate degrees, 1.5 million bachelor’s degrees, 589,000 master’s degrees (including 20,000 postbaccalaureate certificates), 62,000 doctoral degrees (including 13,000 postmaster’s certificates), and 86,000 first professional degrees (including 1,000 first professional certificates). In addition, there were 357,000 nondegree formal awards for the completion of 1- to 4-year curricula during 2003–04, along with 364,000 awards for the completion of programs of less than 1 year. Both levels of awards saw considerable growth from 10 years earlier, with 1- to 4- year awards increasing by 49 percent and awards of less than 1 year by 158 percent. More than a third of both types of awards were earned in the field of health professions and related clinical sciences, with significant numbers also earned in personal and culinary services; mechanic and repair technologies/technicians; and business, management, marketing, and related support services.

About 675,000 associate degrees were earned, an increase of 27 percent from 10 years earlier. Almost two-thirds were earned in three disciplines: liberal arts and sciences, general studies, and humanities; health professions and related clinical sciences; and business, management, marketing, and related support services. According to the middle alternative set of the most recent NCES projections, which uses a base year of 2002–03, the number of associate degrees earned is expected to grow to 735,000 by 2013–14, an increase of 16 percent over the 2002–03 figure.

The number of earned bachelor’s degrees earned was 1,492,000 during 2003–04, up about 28 percent from 1993–94. Business, management, marketing, and related support services accounted for about 22 percent of these degrees, while social sciences contributed 9 percent and education an-

other 8 percent. Disciplines that saw rapid growth over the past 10 years include computer and information sciences and support services (up about 153 percent); parks, recreation, leisure, and fitness studies (up about 97 percent); and visual and performing arts (up about 64 percent). NCES projects that the number of bachelor’s degrees earned will grow to 1,582,000 by 2013–14, an increase of 17 percent from 2002–03.

Master’s degrees earned totaled 569,000 in 2003–04, about 47 percent more than in 1993–94. More than half were earned in the fields of education and business, management, marketing, and related support services. These fields also accounted for the majority of gains in master’s degrees earned over the last 10 years, with education degrees increasing by 65,000 (65 percent growth) and business, management, marketing, and related support services degrees increasing by 51,000 (55 percent growth). NCES projects the number of master’s degrees earned to grow to 693,000 by 2013–14, an increase of 35 percent from 2002–03. Data presented in Table VII-1 include about 20,000 postbaccalaureate certificates earned in 2003–04, primarily from education programs.

About 49,000 doctoral degrees were earned during 2003–04, an increase of 14 percent from 10 years earlier. The disciplines in which most of the degrees were earned were education, engineering, biological and biomedical sciences, and psychology, together totaling almost half of all doctoral degrees earned. NCES projects the number of doctoral degrees earned to grow to 55,000, an increase of 19 percent from 2002–03. Data presented in Table VII–1 include about 13,000 postmaster’s certificates earned in 2003–04, primarily from education programs.

The number of first professional degrees earned totaled approximately 85,000 during 2003–04, about 13 percent more than in 1993–94. Forty-eight percent were earned in law and legal studies, 45 percent in health professions and related clinical sciences, and the remainder in theology and religious vocations. NCES projects the number of first professional degrees earned to grow to 101,000 by 2013–14, an increase of 25 percent over the 2002–03 figure. Data presented in Table VII-1 include about 1,000 first professional certificates earned in 2003–04, primarily from health professions and related clinical sciences programs.

Information on obtaining data on postsecondary education from NCES is available on the Internet. Visit the NCES site (<http://www.nces.ed.gov>) for the *Digest of Education Statistics*, IPEDS data from previous years, data from other statistical series, and more information on projections of education statistics.

Table VII-1. Earned awards and degrees by field of study, 2003-04

2000 Classification of Instructional Program (CIP) code and title	Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
<b>Total, all programs.....</b>	<b>363,669</b>	<b>357,211</b>	<b>674,835</b>	<b>1,492,185</b>	<b>588,872</b>	<b>61,976</b>	<b>85,993</b>
<b>1. Agriculture, general .....</b>	<b>2,887</b>	<b>1,941</b>	<b>5,071</b>	<b>14,421</b>	<b>2,303</b>	<b>752</b>	<b>-</b>
1.00 Agriculture, general .....	11	24	381	1,441	242	3	-
1.01 Agricultural business and management .....	659	264	909	4,109	499	129	-
1.0101 Agricultural business and management, general.....	45	23	394	1,075	60	-	-
1.0102 Agribusiness/agricultural business operations.....	4	85	187	1,596	59	-	-
1.0103 Agricultural economics .....	-	-	3	838	373	129	-
1.0104 Farm/farm and ranch management.....	579	152	133	103	7	-	-
1.0105 Agricultural/farm supplies retailing and wholesaling.....	29	4	122	68	-	-	-
1.0106 Agricultural business technology .....	2	-	2	1	-	-	-
1.0199 Agricultural business and management, other .....	-	-	68	428	-	-	-
1.02 Agricultural mechanization .....	163	220	287	207	2	-	-
1.0201 Agricultural mechanization, general .....	11	50	91	185	2	-	-
1.0204 Agricultural power machinery operation .....	8	13	95	-	-	-	-
1.0205 Agricultural mechanics and equipment/machine technology.....	141	102	89	-	-	-	-
1.0299 Agricultural mechanization, other .....	3	55	12	22	-	-	-
1.03 Agricultural production operations .....	185	363	713	242	67	7	-
1.0301 Agricultural production operations, general .....	25	109	273	61	19	-	-
1.0302 Animal/livestock husbandry and production.....	50	193	326	120	-	-	-
1.0303 Aquaculture .....	62	11	16	36	39	6	-
1.0304 Crop production.....	19	3	63	25	9	1	-
1.0306 Dairy husbandry and production .....	-	26	7	-	-	-	-
1.0307 Horse husbandry/equine science and management.....	-	20	21	-	-	-	-
1.0399 Agricultural production operations, other .....	29	1	7	-	-	-	-
1.04 Agricultural and food products processing .....	5	9	12	152	5	9	-
1.05 Agricultural and domestic animal services .....	278	72	252	489	-	-	-
1.0504 Dog/pet/animal grooming .....	89	-	-	-	-	-	-
1.0505 Animal training.....	26	2	34	-	-	-	-
1.0507 Equestrian/equine studies .....	120	57	199	489	-	-	-
1.0508 Taxidermy/taxidermist.....	24	3	-	-	-	-	-
1.0599 Agricultural and domestic animal services, other .....	19	10	19	-	-	-	-
1.06 Applied horticulture/horticultural business services .....	1,479	917	2,007	679	27	10	-
1.0601 Applied horticulture/horticulture operations, general.....	693	413	641	204	14	6	-
1.0603 Ornamental horticulture.....	157	108	353	191	8	1	-
1.0604 Greenhouse operations and management .....	41	23	38	-	-	-	-
1.0605 Landscaping and groundskeeping .....	268	206	503	154	5	-	-
1.0606 Plant nursery operations and management.....	77	30	67	-	-	-	-
1.0607 Turf and turfgrass management .....	63	71	335	111	-	-	-
1.0608 Floriculture/floristry operations and management.....	166	48	12	-	-	3	-
1.0699 Applied horticulture/horticultural business services, other .....	14	18	58	19	-	-	-
1.07 International agriculture .....	-	-	-	23	19	-	-
1.08 Agricultural public services .....	-	2	1	290	36	9	-
1.0801 Agricultural and extension education services .....	-	2	1	64	32	9	-
1.0802 Agricultural communication/journalism .....	-	-	-	195	4	-	-
1.0899 Agricultural public services, other.....	-	-	-	31	-	-	-
1.09 Animal sciences.....	4	24	325	3,873	445	168	-
1.0901 Animal sciences, general.....	4	4	155	3,458	382	138	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
1.0902	Agricultural animal breeding .....	-	-	-	31	4	4	-
1.0903	Animal health .....	-	-	39	-	14	-	-
1.0904	Animal nutrition .....	-	-	-	-	3	5	-
1.0905	Dairy science .....	-	17	9	148	17	5	-
1.0906	Livestock management .....	-	-	-	6	-	-	-
1.0907	Poultry science .....	-	1	27	105	19	14	-
1.0999	Animal sciences, other .....	-	2	95	125	6	2	-
1.1	Food science and technology .....	-	-	6	585	325	147	-
1.1001	Food science .....	-	-	1	574	302	136	-
1.1002	Food technology and processing .....	-	-	2	-	7	-	-
1.1099	Food science and technology, other .....	-	-	3	11	16	11	-
1.11	Plant sciences .....	8	23	67	1,921	493	196	-
1.1101	Plant sciences, general .....	-	5	4	337	74	22	-
1.1102	Agronomy and crop science .....	3	6	5	507	186	91	-
1.1103	Horticultural science .....	5	12	46	853	115	44	-
1.1104	Agricultural and horticultural plant breeding .....	-	-	-	-	19	16	-
1.1105	Plant protection and integrated pest management .....	-	-	8	32	17	1	-
1.1106	Range science and management .....	-	-	4	130	42	8	-
1.1199	Plant sciences, other .....	-	-	-	62	40	14	-
1.12	Soil sciences .....	-	-	15	132	100	59	-
1.1201	Soil science and agronomy, general .....	-	-	15	129	98	59	-
1.1299	Soil sciences, other .....	-	-	-	3	2	-	-
1.99	Agriculture, agricultural operations, and related sciences, other .....	95	23	96	278	43	15	-
<b>3.</b>	<b>Natural resources and conservation .....</b>	<b>686</b>	<b>126</b>	<b>1,338</b>	<b>9,279</b>	<b>2,587</b>	<b>439</b>	<b>-</b>
3.01	Natural resources conservation and research .....	17	43	393	6,173	1,462	188	-
3.0101	Natural resources/conservation, general .....	11	20	268	1,177	340	63	-
3.0103	Environmental studies .....	4	18	53	2,786	483	46	-
3.0104	Environmental science .....	2	5	36	1,843	587	79	-
3.0188	Environmental science/studies .....	-	-	36	367	51	-	-
3.0199	Natural resources conservation and research, other .....	-	-	-	-	1	-	-
3.02	Natural resources management and policy .....	562	18	213	539	335	31	-
3.0201	Natural resources management and policy .....	26	13	80	362	262	16	-
3.0204	Natural resource economics .....	-	-	-	5	-	2	-
3.0205	Water, wetlands, and marine resources management .....	-	3	12	26	35	-	-
3.0206	Land use planning and management/development .....	-	-	2	54	36	10	-
3.0299	Natural resources management and policy, other .....	536	2	119	92	2	3	-
3.03	Fishing and fisheries sciences and management .....	26	-	56	206	98	20	-
3.05	Forestry .....	34	57	457	1,276	495	153	-
3.0501	Forestry, general .....	3	19	90	522	261	71	-
3.0502	Forest sciences and biology .....	-	-	-	151	98	47	-
3.0506	Forest management/forest resources management .....	3	10	52	126	36	5	-
3.0508	Urban forestry .....	-	-	19	53	14	-	-
3.0509	Wood science and wood products/pulp and paper technology .....	7	2	10	147	22	10	-
3.051	Forest resources production and management .....	-	-	-	-	3	-	-
3.0511	Forest technology/technician .....	14	22	246	117	15	14	-
3.0599	Forestry, other .....	7	4	40	160	46	6	-
3.06	Wildlife and wildlands science and management .....	47	8	215	920	165	26	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
3.99	Natural resources and conservation, other ..	-	-	4	165	32	21	-
<b>4.</b>	<b>Architecture and related services.....</b>	<b>169</b>	<b>172</b>	<b>492</b>	<b>8,939</b>	<b>5,487</b>	<b>215</b>	<b>-</b>
4.02	Architecture and related services .....	-	-	40	5,440	3,096	87	-
4.03	City/urban, community and regional planning .....	-	-	-	559	1,776	111	-
4.04	Environmental design .....	-	-	3	775	16	11	-
4.05	Interior architecture .....	2	110	231	705	34	-	-
4.06	Landscape architecture .....	5	-	22	967	411	2	-
4.08	Architectural history and criticism .....	-	-	-	27	16	2	-
4.09	Architectural technology/technician .....	78	60	145	5	-	-	-
4.99	Architecture and related services, other .....	84	2	51	461	138	2	-
<b>5.</b>	<b>Area, ethnic, cultural, and gender studies..</b>	<b>316</b>	<b>94</b>	<b>107</b>	<b>9,107</b>	<b>1,818</b>	<b>297</b>	<b>-</b>
5.01	Area studies.....	174	20	9	4,884	1,256	195	-
5.0101	African studies .....	15	-	-	41	44	7	-
5.0102	American/United States studies/civilization .....	2	-	6	1,797	253	94	-
5.0103	Asian studies/civilization .....	27	1	3	547	119	1	-
5.0104	East Asian studies .....	2	1	-	464	95	21	-
5.0105	Central/Middle and Eastern European studies .....	-	-	-	8	11	2	-
5.0106	European studies/civilization .....	4	-	-	128	23	-	-
5.0107	Latin American studies .....	33	17	-	652	285	5	-
5.0108	Near and Middle Eastern studies .....	8	-	-	176	135	38	-
5.0109	Pacific area/Pacific rim studies.....	-	-	-	9	8	-	-
5.011	Russian studies .....	17	1	-	137	75	7	-
5.0111	Scandinavian studies .....	-	-	-	37	4	-	-
5.0112	South Asian studies .....	-	-	-	11	7	5	-
5.0113	Southeast Asian studies .....	-	-	-	4	13	-	-
5.0114	Western European studies .....	39	-	-	20	55	2	-
5.0115	Canadian studies.....	-	-	-	2	-	-	-
5.0118	Slavic studies .....	-	-	-	5	-	-	-
5.012	Ural-Altai and Central Asian studies .....	-	-	-	-	8	2	-
5.0122	Regional studies (US, Canadian, foreign) .....	-	-	-	-	8	4	-
5.0123	Chinese studies.....	-	-	-	16	14	-	-
5.0124	French studies.....	-	-	-	37	1	7	-
5.0125	German studies .....	-	-	-	50	-	-	-
5.0126	Italian studies .....	-	-	-	45	4	-	-
5.0127	Japanese studies .....	-	-	-	34	2	-	-
5.0128	Korean studies .....	-	-	-	-	8	-	-
5.013	Spanish and Iberian studies .....	-	-	-	10	-	-	-
5.0199	Area studies, other .....	27	-	-	654	84	-	-
5.02	Ethnic, cultural minority, and gender studies .....	142	72	96	3,691	404	88	-
5.0201	African-American/Black studies .....	27	11	-	907	93	24	-
5.0202	American Indian/Native American studies .....	-	15	42	173	34	1	-
5.0203	Hispanic-American, Puerto Rican and Mexican-American/Chicano studies .....	-	-	-	414	35	2	-
5.0206	Asian-American studies .....	-	9	-	230	20	-	-
5.0207	Women's studies .....	107	36	7	1,459	165	43	-
5.0208	Gay/lesbian studies .....	-	1	-	-	-	-	-
5.0299	Ethnic, cultural minority, and gender studies, other .....	8	-	47	508	57	18	-
5.99	Area, ethnic, cultural, and gender studies, other .....	-	2	2	532	158	14	-
<b>9.</b>	<b>Communication, journalism, and related programs.....</b>	<b>1,000</b>	<b>1,128</b>	<b>2,469</b>	<b>73,962</b>	<b>6,632</b>	<b>488</b>	<b>-</b>
9.01	Communication and media studies .....	91	25	838	41,179	2,989	350	-
9.0101	Communication studies/speech communication and rhetoric .....	7	13	725	33,228	2,110	258	-
9.0102	Mass communication/media studies .....	84	12	111	6,981	620	74	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
9.0199	Communication and media studies, other .	—	—	2	970	259	18	—
9.04	Journalism .....	15	9	427	13,312	1,607	60	—
9.0401	Journalism .....	15	7	265	11,635	1,440	60	—
9.0402	Broadcast journalism .....	—	2	126	962	60	—	—
9.0404	Photojournalism .....	—	—	10	108	—	—	—
9.0499	Journalism, other .....	—	—	26	607	107	—	—
9.07	Radio, television, and digital communication	527	332	658	7,405	555	21	—
9.0701	Radio and television .....	521	290	407	6,523	409	11	—
9.0702	Digital communication and media/ multimedia .....	6	42	247	686	140	10	—
9.0799	Radio, television, and digital communication, other .....	—	—	4	196	6	—	—
9.09	Public relations, advertising, and applied communication .....	50	110	347	9,621	593	5	—
9.0901	Organizational communication, general ....	6	1	2	635	103	1	—
9.0902	Public relations/image management .....	31	1	11	4,104	181	—	—
9.0903	Advertising .....	13	107	321	4,468	229	4	—
9.0904	Political communication .....	—	—	—	68	2	—	—
9.0905	Health communication .....	—	—	—	7	16	—	—
9.0999	Public relations, advertising, and applied communication, other .....	—	1	13	339	62	—	—
9.1	Publishing .....	3	—	—	—	42	—	—
9.99	Communication, journalism, and related programs, other .....	314	652	199	2,445	846	52	—
<b>10.</b>	<b>Communications technologies/technicians and support services .....</b>	<b>1,542</b>	<b>1,976</b>	<b>3,448</b>	<b>2,120</b>	<b>365</b>	<b>10</b>	<b>—</b>
10.01	Communications technology/technician .....	54	47	96	91	9	—	—
10.02	Audiovisual communications technologies/ technicians .....	900	420	1,451	736	138	10	—
10.0201	Photographic and film/video technology/ technician and assistant .....	38	50	217	50	—	—	—
10.0202	Radio and television broadcasting technology/technician .....	788	325	976	544	138	10	—
10.0203	Recording arts technology/technician .....	69	23	199	120	—	—	—
10.0299	Audiovisual communications technologies/ technicians, other .....	5	22	59	22	—	—	—
10.03	Graphic communications .....	544	782	1,668	1,034	29	—	—
10.0301	Graphic communications, general .....	24	36	198	151	—	—	—
10.0302	Printing management .....	—	—	—	71	5	—	—
10.0303	Prepress/desktop publishing and digital imaging design .....	202	218	297	23	—	—	—
10.0304	Animation, interactive technology, video graphics, and special effects .....	53	27	403	549	24	—	—
10.0305	Graphic and printing equipment operator, general production .....	103	364	532	168	—	—	—
10.0306	Platemaker/imager .....	10	9	43	—	—	—	—
10.0307	Printing press operator .....	86	76	11	6	—	—	—
10.0308	Computer typography and composition equipment operator .....	19	18	42	—	—	—	—
10.0399	Graphic communications, other .....	47	34	142	66	—	—	—
10.99	Communications technologies/technicians and support services, other .....	44	727	233	259	189	—	—
<b>11.</b>	<b>Computer and information sciences and support services .....</b>	<b>19,822</b>	<b>16,966</b>	<b>42,620</b>	<b>61,313</b>	<b>20,849</b>	<b>1,169</b>	<b>—</b>
11.01	Computer and information sciences, general	4,158	3,998	13,556	28,657	9,554	473	—
11.0101	Computer and information sciences, general .....	3,571	3,195	7,629	22,852	8,328	458	—
11.0102	Artificial intelligence and robotics .....	—	—	—	—	34	13	—
11.0103	Information technology .....	488	626	5,858	5,695	1,146	2	—

— Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
11.0199	Computer and information sciences, other .....	99	177	69	110	46	-	-
11.02	Computer programming .....	3,302	2,451	6,292	1,083	189	-	-
11.0201	Computer programming/programmer, general.....	1,806	1,967	4,056	874	131	-	-
11.0202	Computer programming, specific applications.....	1,365	464	2,067	158	58	-	-
11.0203	Computer programming, vendor/product certification .....	86	2	93	-	-	-	-
11.0299	Computer programming, other .....	45	18	76	51	-	-	-
11.03	Data processing .....	1,372	1,390	2,283	321	15	-	-
11.04	Information science/studies.....	241	603	2,328	8,149	3,278	114	-
11.05	Computer systems analysis .....	810	365	1,366	2,733	332	4	-
11.06	Data entry/microcomputer applications .....	1,895	630	170	-	-	-	-
11.0601	Data entry/microcomputer applications, general.....	1,674	532	145	-	-	-	-
11.0602	Word processing.....	150	74	12	-	-	-	-
11.0699	Data entry/microcomputer applications, other .....	71	24	13	-	-	-	-
11.07	Computer science .....	64	168	997	13,144	4,811	354	-
11.08	Computer software and media applications .	854	1,079	2,013	1,211	263	-	-
11.0801	Web page, digital/multimedia, and information resources design .....	411	651	1,134	353	55	-	-
11.0802	Data modeling/warehousing and database administration .....	121	48	65	153	29	-	-
11.0803	Computer graphics .....	255	150	675	604	143	-	-
11.0899	Computer software and media applications, other .....	67	230	139	101	36	-	-
11.09	Computer systems networking and telecommunications.....	3,036	2,681	6,062	3,042	817	-	-
11.1	Computer/information technology administration and management .....	1,342	1,290	3,073	671	129	-	-
11.1001	System administration/administrator .....	208	185	520	21	-	-	-
11.1002	System, networking, and LAN/WAN management/manager .....	642	290	1,323	17	-	-	-
11.1003	Computer and information systems security .....	51	301	128	26	49	-	-
11.1004	Web/multimedia management and webmaster.....	49	150	305	244	-	-	-
11.1099	Computer/information technology services administration and management, other .....	392	364	797	363	80	-	-
11.99	Computer and information sciences and support services, other .....	2,748	2,311	4,480	2,302	1,461	224	-
<b>12.</b>	<b>Personal and culinary services.....</b>	<b>31,580</b>	<b>60,583</b>	<b>14,305</b>	<b>528</b>	<b>3</b>	<b>-</b>	<b>-</b>
12.03	Funeral service and mortuary science .....	92	339	1,325	163	-	-	-
12.0301	Funeral service and mortuary science, general.....	75	315	1,184	163	-	-	-
12.0302	Funeral direction/service .....	17	20	22	-	-	-	-
12.0303	Mortuary science and embalming/embalmer.....	-	-	119	-	-	-	-
12.0399	Funeral service and mortuary science, other .....	-	4	-	-	-	-	-
12.04	Cosmetology and related personal grooming services .....	24,255	54,733	383	-	-	-	-
12.0401	Cosmetology/cosmetologist, general .....	8,250	49,003	273	-	-	-	-
12.0402	Barbering/barber .....	532	2,943	9	-	-	-	-
12.0404	Electrolysis/electrology and electrolysis technician .....	73	68	-	-	-	-	-
12.0406	Make-up artist/specialist.....	1,179	42	-	-	-	-	-
12.0407	Hair styling/stylist and hair design .....	290	454	-	-	-	-	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
12.0408	Facial treatment specialist/facialist.....	595	212	-	-	-	-	-
12.0409	Aesthetician/esthetician and skin care specialist.....	3,858	697	75	-	-	-	-
12.041	Nail technician/specialist and manicurist...	5,187	283	-	-	-	-	-
12.0411	Permanent cosmetics/makeup and tattooing.....	147	-	-	-	-	-	-
12.0412	Salon/beauty salon management/manager	52	5	20	-	-	-	-
12.0413	Cosmetology, barber/styling, and nail instructor.....	585	277	6	-	-	-	-
12.0499	Cosmetology and related personal grooming arts, other.....	3,507	749	-	-	-	-	-
12.05	Culinary arts and related services.....	5,476	5,363	12,581	365	-	-	-
12.05	Cooking and related culinary arts, general	512	427	366	-	-	-	-
12.0501	Baking and pastry arts/baker/pastry chef..	734	737	808	31	-	-	-
12.0502	Bartending/bartender.....	860	1	-	-	-	-	-
12.0503	Culinary arts/chef training.....	1,040	3,426	10,246	239	-	-	-
12.0504	Restaurant, culinary, and catering management/manager.....	250	178	700	56	-	-	-
12.0505	Food preparation/professional cooking/kitchen assistant.....	389	118	-	-	-	-	-
12.0506	Meat cutting/meat cutter.....	83	15	3	-	-	-	-
12.0507	Food service, waiter/waitress, and dining room management/manager.....	-	25	12	-	-	-	-
12.0508	Institutional food workers.....	89	119	65	3	-	-	-
12.0588	Institutional food workers and administrators, general.....	1,182	26	36	-	-	-	-
12.0599	Culinary arts and related services, other...	337	291	345	36	3	-	-
12.99	Personal and culinary services, other.....	1,757	148	16	-	-	-	-
<b>13.</b>	<b>Education.....</b>	<b>4,847</b>	<b>2,900</b>	<b>12,615</b>	<b>113,086</b>	<b>176,019</b>	<b>14,990</b>	<b>-</b>
13.01	Education, general.....	19	64	3,193	3,081	28,833	1,778	-
13.02	Bilingual, multilingual, and multicultural education.....	-	36	11	116	3,564	30	-
13.0201	Bilingual and multilingual education.....	-	36	11	107	3,518	17	-
13.0202	Multicultural education.....	-	-	-	-	20	13	-
13.0203	Indian/Native American education.....	-	-	-	9	11	-	-
13.0299	Bilingual, multilingual, and multicultural education, other.....	-	-	-	-	15	-	-
13.03	Curriculum and instruction.....	2	-	-	5	13,642	1,383	-
13.04	Educational administration and supervision	17	12	-	170	22,479	7,881	-
13.0401	Educational leadership and administration, general.....	15	-	-	27	16,475	5,023	-
13.0402	Administration of special education.....	-	-	-	-	19	15	-
13.0403	Adult and continuing education administration.....	-	-	-	14	221	68	-
13.0404	Educational, instructional, and curriculum supervision.....	-	-	-	46	989	755	-
13.0406	Higher education/higher education administration.....	1	12	-	-	682	327	-
13.0407	Community college education.....	-	-	-	-	33	6	-
13.0408	Elementary and middle school administration/principalship.....	-	-	-	-	1,141	464	-
13.0409	Secondary school administration/principalship.....	-	-	-	-	288	25	-
13.041	Urban education and leadership.....	-	-	-	78	244	24	-
13.0411	Superintendency and educational system administration.....	-	-	-	-	46	9	-
13.0488	Elementary, middle and secondary education administration.....	-	-	-	-	85	177	-
13.0499	Educational administration and supervision, other.....	1	-	-	5	2,256	988	-
13.05	Educational/instructional media design.....	65	22	280	59	3,976	191	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
13.06	Educational assessment, evaluation, and research.....	-	-	-	-	155	100	-
13.0601	Educational evaluation and research .....	-	-	-	-	34	48	-
13.0603	Educational statistics and research methods.....	-	-	-	-	51	26	-
13.0604	Educational assessment, testing, and measurement.....	-	-	-	-	51	17	-
13.0699	Educational assessment, evaluation, and research, other .....	-	-	-	-	19	9	-
13.07	International and comparative education .....	-	-	-	-	144	14	-
13.09	Social and philosophical foundations of education.....	-	-	-	1	1,085	149	-
13.1	Special education and teaching .....	130	137	431	8,527	14,348	415	-
13.1001	Special education and teaching, general ..	107	7	140	6,699	11,066	342	-
13.1003	Education/teaching of individuals with hearing impairments, including deafness .....	-	7	34	197	147	9	-
13.1004	Education/teaching of the gifted and talented.....	-	-	-	-	261	18	-
13.1005	Education/teaching of individuals with emotional disturbances.....	-	1	-	118	130	10	-
13.1006	Education/teaching of individuals with mental retardation.....	-	4	2	314	122	5	-
13.1007	Education/teaching of individuals with multiple disabilities.....	-	-	-	61	271	1	-
13.1008	Education/teaching of individuals with orthopedic and other physical health impairments.....	-	-	1	21	35	4	-
13.1009	Education/teaching of individuals with vision impairments/ blindness.....	-	-	-	22	91	-	-
13.1011	Education/teaching of individuals with specific learning disabilities .....	-	9	-	294	633	6	-
13.1012	Education/teaching of individuals with speech or language impairments .....	-	-	-	313	150	1	-
13.1013	Education/teaching of individuals with autism .....	-	-	-	-	51	-	-
13.1014	Education/teaching of individuals who are developmentally delayed .....	-	-	-	-	-	-	-
13.1015	Education/teaching of individuals in early childhood special education programs	23	4	20	99	850	2	-
13.1099	Special education and teaching, other .....	-	105	234	389	541	17	-
13.11	Student counseling and personnel services	4	6	13	35	13,713	855	-
13.1101	Counselor education/school counseling and guidance services.....	4	6	-	29	12,844	833	-
13.1102	College student counseling and personnel services .....	-	-	-	-	686	16	-
13.1199	Student counseling and personnel services, other .....	-	-	13	6	183	6	-
13.12	Teacher education and professional development, specific levels and methods.....	1,131	1,242	6,723	67,371	42,413	832	-
13.1201	Adult and continuing education and teaching .....	3	2	5	22	1,420	137	-
13.1202	Elementary education and teaching .....	15	113	2,273	48,990	20,522	273	-
13.1203	Junior high/intermediate/middle school education and teaching .....	-	-	43	2,419	1,263	108	-
13.1205	Secondary education and teaching .....	-	33	555	4,898	8,161	113	-
13.1206	Teacher education, multiple levels.....	2	-	362	836	4,306	12	-
13.1207	Montessori teacher education .....	10	33	-	32	139	-	-
13.1209	Kindergarten/preschool education and teaching .....	19	93	717	1,994	548	21	-
13.121	Early childhood education and teaching....	1,029	932	2,364	7,214	1,507	95	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
13.1288	Pre-elementary/early childhood/ kindergarten teacher education .....	43	31	262	749	181	5	-
13.1299	Teacher education and professional development, specific levels and methods, other .....	10	5	142	217	4,366	68	-
13.13	Teacher education and professional development, specific subject areas...	320	453	694	31,583	22,788	965	-
13.1301	Agricultural teacher education .....	-	-	26	604	403	37	-
13.1302	Art teacher education .....	13	1	13	1,566	932	38	-
13.1303	Business teacher education .....	-	1	9	643	362	13	-
13.1304	Driver and safety teacher education .....	-	-	-	-	17	1	-
13.1305	English/language arts teacher education ..	3	4	32	2,725	1,182	26	-
13.1306	Foreign language teacher education .....	16	-	7	150	261	22	-
13.1307	Health teacher education .....	109	-	50	1,759	671	66	-
13.1308	Family and consumer sciences/home economics teacher education .....	-	-	-	338	70	4	-
13.1309	Technology teacher education/industrial arts teacher education .....	-	-	28	937	638	36	-
13.131	Sales and marketing operations/marketing and distribution teacher education .....	-	-	-	65	90	3	-
13.1311	Mathematics teacher education .....	-	-	10	1,788	1,235	74	-
13.1312	Music teacher education .....	-	2	18	3,258	991	83	-
13.1314	Physical education teaching and coaching .....	34	16	326	9,053	2,559	145	-
13.1315	Reading teacher education .....	-	-	-	143	7,127	160	-
13.1316	Science teacher education/general science teacher education .....	-	-	41	944	927	56	-
13.1317	Social science teacher education .....	-	1	5	1,008	254	10	-
13.1318	Social studies teacher education .....	-	4	22	2,049	784	9	-
13.1319	Technical teacher education .....	98	6	67	266	202	55	-
13.132	Trade and industrial teacher education .....	16	37	20	1,174	361	43	-
13.1321	Computer teacher education .....	1	-	-	166	1,430	9	-
13.1322	Biology teacher education .....	-	-	2	467	204	1	-
13.1323	Chemistry teacher education .....	-	-	-	77	54	2	-
13.1324	Drama and dance teacher education .....	-	6	-	96	48	-	-
13.1325	French language teacher education .....	-	-	-	80	27	-	-
13.1326	German language teacher education .....	-	-	-	27	2	-	-
13.1327	Health occupations teacher education .....	-	-	-	30	34	1	-
13.1328	History teacher education .....	-	1	14	787	94	-	-
13.1329	Physics teacher education .....	-	-	1	39	21	-	-
13.133	Spanish language teacher education .....	-	1	-	414	88	-	-
13.1331	Speech teacher education .....	-	-	-	184	2	-	-
13.1332	Geography teacher education .....	-	-	-	3	22	-	-
13.1333	Latin teacher education .....	-	-	-	1	3	-	-
13.1334	School librarian/school library media specialist .....	-	-	-	8	148	-	-
13.1335	Psychology teacher education .....	-	-	-	23	-	-	-
13.1399	Teacher education and professional development, specific subject areas, other .....	30	373	3	711	1,545	71	-
13.14	Teaching English or French as a second or foreign language .....	2,512	140	8	210	2,307	45	-
13.1401	Teaching English as second/foreign language/ESL language instructor .....	2,484	135	8	210	2,305	45	-
13.1402	Teaching French as a second or foreign language .....	-	-	-	-	2	-	-
13.1499	Teaching English or French as a second or foreign language, other .....	28	5	-	-	-	-	-
13.15	Teaching assistants/aides .....	406	613	775	1	29	-	-
13.1501	Teacher assistant/aide .....	401	613	774	1	-	-	-
13.1502	Adult literacy tutor/instructor .....	-	-	-	-	29	-	-
13.1599	Teaching assistants/aides, other .....	5	-	1	-	-	-	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
13.99	Education, other .....	241	175	487	1,927	6,543	352	—
<b>14.</b>	<b>Engineering.....</b>	<b>198</b>	<b>114</b>	<b>2,788</b>	<b>65,635</b>	<b>33,273</b>	<b>6,207</b>	<b>—</b>
14.01	Engineering, general .....	9	9	1,322	2,004	1,528	230	—
14.02	Aerospace, aeronautical, and astronautical engineering.....	—	—	—	2,353	870	198	—
14.03	Agricultural/biological engineering and bioengineering.....	—	—	1	700	189	94	—
14.04	Architectural engineering.....	—	—	9	584	102	1	—
14.05	Biomedical/medical engineering.....	5	—	—	2,194	890	341	—
14.06	Ceramic sciences and engineering .....	—	—	—	81	32	12	—
14.07	Chemical engineering.....	1	—	305	4,875	1,172	641	—
14.08	Civil engineering.....	6	1	28	8,085	3,827	662	—
14.0801	Civil engineering, general.....	1	—	18	7,926	3,501	615	—
14.0802	Geotechnical engineering.....	5	—	—	—	5	—	—
14.0803	Structural engineering .....	—	—	—	96	84	12	—
14.0804	Transportation and highway engineering ..	—	—	—	1	101	5	—
14.0805	Water resources engineering .....	—	—	—	7	39	20	—
14.0899	Civil engineering, other.....	—	1	10	55	97	10	—
14.09	Computer engineering, general.....	8	42	639	7,176	2,800	196	—
14.0901	Computer engineering, general.....	8	33	555	6,864	2,139	164	—
14.0903	Computer software engineering .....	—	9	5	179	486	—	—
14.0999	Computer engineering, other.....	—	—	79	133	175	32	—
14.1	Electrical, electronics, and communications engineering.....	22	32	252	14,768	9,574	1,489	—
14.11	Engineering mechanics .....	59	—	—	113	119	48	—
14.12	Engineering physics .....	—	—	—	342	51	20	—
14.13	Engineering science .....	—	1	57	258	318	72	—
14.14	Environmental/environmental health engineering.....	24	—	21	466	538	115	—
14.18	Materials engineering .....	—	—	1	535	583	339	—
14.19	Mechanical engineering .....	—	—	71	14,296	4,441	814	—
14.2	Metallurgical engineering .....	—	—	—	112	42	27	—
14.21	Mining and mineral engineering .....	—	—	—	96	57	8	—
14.22	Naval architecture and marine engineering..	—	14	—	276	26	8	—
14.23	Nuclear engineering .....	—	—	—	207	153	70	—
14.24	Ocean engineering .....	—	—	—	120	91	19	—
14.25	Petroleum engineering .....	—	—	—	274	257	34	—
14.27	Systems engineering.....	61	—	3	578	774	91	—
14.28	Textile sciences and engineering.....	—	—	—	185	34	26	—
14.31	Materials science.....	—	—	11	162	144	122	—
14.32	Polymer/plastics engineering .....	—	—	—	79	77	52	—
14.33	Construction engineering .....	—	—	—	285	10	—	—
14.34	Forest engineering .....	—	—	—	19	9	4	—
14.35	Industrial engineering .....	2	4	8	3,150	2,478	235	—
14.3501	Industrial engineering .....	2	4	6	2,877	2,228	218	—
14.3588	Industrial/manufacturing engineering .....	—	—	2	273	250	17	—
14.36	Manufacturing engineering.....	—	—	28	337	373	13	—
14.37	Operations research.....	—	—	—	428	312	40	—
14.38	Surveying engineering.....	—	—	20	7	8	2	—
14.39	Geological/geophysical engineering.....	—	—	—	110	41	14	—
14.99	Engineering, other .....	1	11	12	380	1,353	170	—
<b>15.</b>	<b>Engineering technologies/technicians.....</b>	<b>10,037</b>	<b>15,117</b>	<b>37,929</b>	<b>14,804</b>	<b>2,630</b>	<b>66</b>	<b>—</b>
15.00	Engineering technology, general .....	45	21	297	693	157	—	—
15.01	Architectural engineering technologies/technicians.....	145	112	1,108	511	—	—	—
15.02	Civil engineering technologies/technicians...	71	72	1,112	404	2	—	—
15.03	Electrical engineering technologies/technicians.....	1,212	2,949	12,426	3,658	62	—	—

— Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
15.0303	Electrical, electronic, and communications engineering technology/technician .....	677	1,689	10,973	3,081	24	-	-
15.0304	Laser and optical technology/technician ...	45	10	129	6	-	-	-
15.0305	Telecommunications technology/technician .....	134	67	265	192	38	-	-
15.0399	Electrical/electronic engineering technologies/technicians, other .....	356	1,183	1,059	379	-	-	-
15.04	Electromechanical instrumentation and maintenance technologies/technicians	555	999	2,012	130	9	2	-
15.0401	Biomedical technology/technician .....	16	29	311	4	9	2	-
15.0403	Electromechanical technology/electromechanical engineering tech ...	226	605	717	89	-	-	-
15.0404	Instrumentation technology/technician .....	81	231	608	4	-	-	-
15.0405	Robotics technology/technician .....	17	43	241	26	-	-	-
15.0499	Electromechanical instrumentation/maintenance techs, other .....	215	91	135	7	-	-	-
15.05	Environmental control technologies/technicians .....	1,966	2,817	1,454	183	121	4	-
15.0501	Heating, air conditioning, and refrigeration technology/technician .....	1,334	2,552	901	12	-	-	-
15.0503	Energy management and systems technology/technician .....	1	1	67	22	19	-	-
15.0505	Solar energy technology/technician .....	4	-	5	-	-	-	-
15.0506	Water quality and wastewater treatment management and recycling technology .....	198	115	158	30	-	-	-
15.0507	Environmental engineering technology/environmental technology .....	54	27	191	107	58	-	-
15.0508	Hazardous materials management and waste technology/technician .....	361	28	33	1	7	-	-
15.0599	Environmental control technologies/technicians, other .....	14	94	99	11	37	4	-
15.06	Industrial production technologies/technicians .....	602	595	2,368	3,124	329	6	-
15.0607	Plastics engineering technology/technician .....	25	11	104	129	-	-	-
15.0611	Metallurgical technology/technician .....	-	10	32	9	-	-	-
15.0612	Industrial technology/technician .....	251	84	651	1,758	239	6	-
15.0613	Manufacturing technology/technician .....	131	162	437	753	54	-	-
15.0688	Industrial/manufacturing technology/technician .....	90	141	477	114	11	-	-
15.0699	Industrial production technologies/technicians, other .....	105	187	667	361	25	-	-
15.07	Quality control and safety technologies/technicians .....	356	182	376	451	170	3	-
15.0701	Occupational safety and health technology/technician .....	229	46	188	411	91	-	-
15.0702	Quality control technology/technician .....	106	72	166	13	72	2	-
15.0703	Industrial safety technology/technician .....	9	5	2	17	-	-	-
15.0704	Hazardous materials information systems technology/technician .....	-	-	3	-	-	-	-
15.0799	Quality control and safety technologies/technicians, other .....	12	59	17	10	7	1	-
15.08	Mechanical engineering related technologies/technicians .....	381	500	2,902	1,784	-	-	-
15.0801	Aeronautical/aerospace engineering technology/technician .....	45	82	427	128	-	-	-
15.0803	Automotive engineering technology/technician .....	102	202	815	319	-	-	-
15.0805	Mechanical engineering/mechanical technology/technician .....	232	114	1,254	1,031	-	-	-
15.0899	Mechanical engineering related technologies/technicians, other .....	2	102	406	306	-	-	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
15.09	Mining and petroleum technologies/technicians.....	106	7	45	13	1	-	-
15.0901	Mining technology/technician .....	101	6	10	1	-	-	-
15.0903	Petroleum technology/technician .....	5	1	28	11	-	-	-
15.0999	Mining and petroleum technologies/technicians, other .....	-	-	7	1	1	-	-
15.1	Construction engineering technologies .....	139	163	674	1,271	75	-	-
15.11	Engineering related technologies .....	122	209	258	191	6	6	-
15.1102	Surveying technology/surveying.....	118	170	217	190	6	6	-
15.1103	Hydraulics and fluid power technology/technician .....	4	36	35	-	-	-	-
15.1199	Engineering-related technologies, other....	-	3	6	1	-	-	-
15.12	Computer engineering technologies/technicians.....	2,117	2,648	4,993	977	5	-	-
15.1201	Computer engineering technology/technician .....	796	886	2,195	884	5	-	-
15.1202	Computer technology/computer systems technology .....	1,160	1,549	2,638	35	-	-	-
15.1203	Computer hardware technology/technician .....	69	164	25	-	-	-	-
15.1204	Computer software technology/technician .....	54	16	91	58	-	-	-
15.1299	Computer engineering technologies/technicians, other .....	38	33	44	-	-	-	-
15.13	Drafting/design engineering technologies/technicians.....	2,131	3,777	7,229	257	-	-	-
15.1301	Drafting and design technology/technician, general.....	1,299	2,099	2,514	71	-	-	-
15.1302	CAD/CADD drafting and/or design technology/technician .....	347	531	2,222	46	-	-	-
15.1303	Architectural drafting and architectural CAD/CADD .....	141	619	1,212	-	-	-	-
15.1304	Civil drafting and civil engineering CAD/CADD .....	1	42	52	-	-	-	-
15.1305	Electrical/electronics drafting and electrical/electronics CAD/CADD .....	38	10	70	1	-	-	-
15.1306	Mechanical drafting and mechanical drafting CAD/CADD .....	279	288	780	130	-	-	-
15.1399	Drafting/design engineering technologies/technicians, other .....	26	188	379	9	-	-	-
15.14	Nuclear engineering technologies/technicians.....	-	-	11	-	-	-	-
15.15	Engineering related fields.....	3	-	13	339	1,472	45	-
15.99	Engineering technologies/technicians, other .....	86	66	651	818	221	-	-
<b>16.</b>	<b>Foreign languages, literatures, and linguistics.....</b>	<b>684</b>	<b>2,813</b>	<b>1,611</b>	<b>23,842</b>	<b>3,186</b>	<b>1,173</b>	<b>-</b>
16.01	Linguistics, comparative, and related language studies and services .....	68	31	157	3,678	1,120	415	-
16.0101	Foreign languages and literatures, general .....	3	-	147	1,594	210	34	-
16.0102	Linguistics.....	-	-	-	1,143	568	214	-
16.0103	Language interpretation and translation....	45	31	10	30	139	-	-
16.0104	Comparative literature .....	20	-	-	887	180	163	-
16.0199	Linguistic/comparative/related language studies and services, other.....	-	-	-	24	23	4	-
16.02	African languages, literatures, and linguistics .....	-	-	-	-	1	1	-
16.03	East Asian languages, literatures, and linguistics .....	51	657	166	888	120	51	-
16.03	East Asian languages, literatures, and linguistics, general.....	-	-	-	90	53	12	-
16.0301	Chinese language and literature .....	22	205	63	243	15	5	-
16.0302	Japanese language and literature .....	28	17	27	462	24	8	-
16.0303	Korean language and literature .....	-	-	-	9	2	1	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
16.0399	East Asian languages, literatures, and linguistics, other.....	1	435	76	84	26	25	-
16.04	Slavic, Baltic and Albanian languages, literatures, and linguistics.....	1	420	102	467	68	38	-
16.04	Slavic languages, literatures, and linguistics, general.....	-	90	14	59	45	33	-
16.0402	Russian language and literature.....	1	330	88	396	21	4	-
16.0406	Czech language and literature.....	-	-	-	1	-	-	-
16.0407	Polish language and literature.....	-	-	-	2	-	-	-
16.0499	Slavic/Baltic/Albanian languages, literatures, and linguistics, other.....	-	-	-	9	2	1	-
16.05	Germanic languages, literatures, and linguistics.....	18	32	21	1,670	188	63	-
16.05	Germanic languages, literatures, and linguistics, general.....	-	-	-	134	27	23	-
16.0501	German language and literature.....	18	32	21	1,504	155	36	-
16.0502	Scandinavian languages, literatures, and linguistics.....	-	-	-	11	3	2	-
16.0503	Danish language and literature.....	-	-	-	2	-	-	-
16.0505	Norwegian language and literature.....	-	-	-	13	-	-	-
16.0506	Swedish language and literature.....	-	-	-	5	-	-	-
16.0599	Germanic languages, literatures, and linguistics, other.....	-	-	-	1	3	2	-
16.06	Modern Greek language and literature.....	-	-	-	3	-	-	-
16.07	South Asian languages, literatures, and linguistics.....	-	10	3	5	6	8	-
16.07	South Asian languages, literatures, and linguistics, general.....	-	10	3	4	6	6	-
16.0702	Sanskrit/classical Indian languages, literatures, and linguistics.....	-	-	-	1	-	2	-
16.09	Romance languages, literatures, and linguistics.....	380	395	344	15,300	1,406	444	-
16.09	Romance languages, literatures, and linguistics, general.....	-	-	-	120	45	31	-
16.0901	French language and literature.....	7	123	40	3,406	361	103	-
16.0902	Italian language and literature.....	13	14	12	400	49	37	-
16.0904	Portuguese language and literature.....	-	15	5	44	10	3	-
16.0905	Spanish language and literature.....	360	243	287	11,152	851	225	-
16.0999	Romance languages, literatures, and linguistics, other.....	-	-	-	178	90	45	-
16.1001	American Indian/Native American languages, literatures, and linguistics.....	-	-	3	16	-	-	-
16.11	Middle/Near Eastern and Semitic languages, literatures, and linguistics.....	3	906	204	116	42	42	-
16.1101	Arabic language and literature.....	3	653	152	26	3	1	-
16.1102	Hebrew language and literature.....	-	54	13	22	7	11	-
16.1103	Ancient Near Eastern/Biblical languages, literature, and linguistics.....	-	-	-	25	5	3	-
16.1199	Middle/Near Eastern/Semitic languages, literature, and linguistics, other.....	-	199	39	43	27	27	-
16.12	Classics and classical languages, literatures, and linguistics.....	-	-	-	1,358	217	75	-
16.12	Classics/classical languages, literature, and linguistics, general.....	-	-	-	1,164	181	73	-
16.1202	Ancient/classical Greek language and literature.....	-	-	-	42	1	-	-
16.1203	Latin language and literature.....	-	-	-	123	13	1	-
16.1299	Classics/classical languages, literature, and linguistics, other.....	-	-	-	29	22	1	-
16.13	Celtic languages, literatures, and linguistics.....	-	-	-	3	-	1	-
16.14	Southeast Asian and Australasian/Pacific languages, literatures, and linguistics.....	-	-	-	2	-	-	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
16.16	American sign language (ASL).....	159	286	593	183	5	-	-
16.1601	American sign language (ASL).....	35	17	39	57	-	-	-
16.1602	Linguistics of ASL and other sign languages.....	2	-	-	-	-	-	-
16.1603	Sign language interpretation and translation.....	84	267	551	126	5	-	-
16.1699	American sign language, other.....	38	2	3	-	-	-	-
16.99	Foreign languages, literatures, and linguistics, other.....	4	76	18	153	13	35	-
<b>19.</b>	<b>Family and consumer sciences/human sciences</b> .....	<b>11,422</b>	<b>5,359</b>	<b>9,543</b>	<b>19,485</b>	<b>1,809</b>	<b>336</b>	<b>-</b>
19.00	Work and family studies.....	332	-	-	50	24	-	-
19.01	Family and consumer sciences/human sciences, general.....	57	9	191	3,829	432	57	-
19.02	Family and consumer sciences/human sciences business services.....	-	1	-	152	10	-	-
19.0201	Business family and consumer sciences/human sciences.....	-	-	-	32	-	-	-
19.0202	Family and consumer sciences/human sciences communication.....	-	-	-	66	3	-	-
19.0203	Consumer merchandising/retailing management.....	-	1	-	50	7	-	-
19.0299	Family/consumer sciences/human sciences business services, other.....	-	-	-	4	-	-	-
19.04	Family and consumer economics and related studies.....	-	-	-	1,543	74	15	-
19.0401	Family resource management studies, general.....	-	-	-	619	34	10	-
19.0402	Consumer economics.....	-	-	-	619	29	-	-
19.0499	Family and consumer economics and related services, other.....	-	-	-	305	11	5	-
19.05	Foods, nutrition, and related services	379	178	298	2,217	375	48	-
19.0501	Foods, nutrition, and wellness studies, general.....	18	20	22	1,524	309	33	-
19.0504	Human nutrition.....	4	2	1	190	60	15	-
19.0505	Food service systems administration/management.....	357	151	274	495	1	-	-
19.0599	Foods, nutrition, and related services, other.....	-	5	1	8	5	-	-
19.06	Housing and human environments.....	450	111	120	388	15	11	-
19.0601	Housing and human environments, general.....	35	-	-	345	15	6	-
19.0604	Facilities planning and management.....	-	2	11	11	-	5	-
19.0605	Home furnishings and equipment installers.....	23	20	78	-	-	-	-
19.0699	Housing and human environments, other.....	392	89	31	32	-	-	-
19.07	Human development, family studies, and related services.....	10,041	4,775	8,511	8,767	777	178	-
19.0701	Human development and family studies, general.....	16	18	150	6,255	439	84	-
19.0702	Adult development and aging.....	235	25	65	24	45	2	-
19.0704	Family systems.....	10	-	-	561	56	3	-
19.0706	Child development.....	651	685	1,274	1,138	114	88	-
19.0707	Family and community services.....	8	5	126	612	82	-	-
19.0708	Child care and support services management.....	5,188	2,070	4,968	106	22	-	-
19.0709	Child care provider/assistant.....	3,288	1,672	1,838	5	-	-	-
19.0799	Human development, family studies, and related services, other.....	645	300	90	66	19	1	-
19.09	Apparel and textiles.....	162	227	420	2,433	85	18	-
19.0901	Apparel and textiles, general.....	15	19	55	2,213	82	16	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
19.0902	Apparel and textile manufacture.....	32	121	171	75	-	-	-
19.0904	Textile science .....	-	-	-	-	-	2	-
19.0905	Apparel and textile marketing management.....	10	17	65	145	3	-	-
19.0906	Fashion and fabric consultant .....	6	3	26	-	-	-	-
19.0999	Apparel and textiles, other .....	99	67	103	-	-	-	-
19.99	Family and consumer sciences/human sciences, other .....	1	58	3	106	17	9	-
<b>22.</b>	<b>Legal professions and studies.....</b>	<b>2,904</b>	<b>4,139</b>	<b>9,495</b>	<b>3,040</b>	<b>5,029</b>	<b>129</b>	<b>41,024</b>
22.00	Nonprofessional general legal studies (undergraduate).....	-	8	170	1,374	38	-	-
22.0000	Legal studies, general .....	-	3	49	1,055	38	-	-
22.0001	Pre-law studies .....	-	5	121	319	-	-	-
22.01	Law (LLB, JD).....	-	-	-	-	-	-	40,816
22.02	Legal research and advanced professional studies (Post-LLB/JD).....	2	6	-	48	3,417	111	208
22.0201	Advanced legal research/studies, general (LLM, MCL, MLI, MSL, JSD/SJD).....	-	-	-	-	493	77	165
22.0202	Programs for foreign lawyers (LLM, MCL)	-	-	-	-	531	-	1
22.0203	American/US law/legal studies/ jurisprudence (LLM, MCJ, JSD/SJD)..	-	-	-	46	141	3	-
22.0205	Banking, corporate, finance, and securities law (LLM, JSD/SJD).....	1	-	-	-	107	-	-
22.0206	Comparative law (LLM, MCL, JSD/SJD) ...	-	-	-	-	139	2	-
22.0207	Energy, environment, and natural resources law (LLM, MS, JSD/SJD) ...	-	-	-	-	28	10	-
22.0208	Health law (LLM, MJ, JSD/SJD).....	1	-	-	-	46	-	-
22.0209	International law and legal studies (LLM, JSD/SJD).....	-	-	-	-	285	3	-
22.021	International business, trade, and tax law (LLM, JSD/SJD).....	-	-	-	-	82	-	42
22.0211	Tax law/taxation (LLM, JSD/SJD).....	-	-	-	-	483	-	-
22.0299	Legal research and advanced professional studies, other .....	-	6	-	2	1,082	16	-
22.03	Legal support services .....	2,794	4,110	9,277	1,166	738	-	-
22.0301	Legal administrative assistant/secretary ...	506	941	726	24	-	-	-
22.0302	Legal assistant/paralegal.....	2,258	2,866	8,244	1,096	738	-	-
22.0303	Court reporting/court reporter .....	30	292	306	46	-	-	-
22.0399	Legal support services, other .....	-	11	1	-	-	-	-
22.99	Legal professions and studies, other.....	108	15	48	452	836	18	-
<b>23.</b>	<b>English language and literature/letters .....</b>	<b>1,171</b>	<b>486</b>	<b>828</b>	<b>57,403</b>	<b>8,039</b>	<b>1,277</b>	<b>-</b>
23.01	English language and literature, general .....	699	456	477	42,943	5,017	1,050	-
23.04	English composition .....	6	1	19	579	74	7	-
23.05	Creative writing.....	8	3	17	2,023	1,874	10	-
23.07	American literature (United States and Canadian).....	-	-	-	155	12	2	-
23.08	English literature.....	-	-	13	977	130	28	-
23.1	Speech and rhetorical studies .....	205	-	272	9,146	570	97	-
23.11	Technical and business writing .....	33	16	20	486	239	13	-
23.99	English language and literature/letters, other	220	10	10	1,094	123	70	-
<b>24.</b>	<b>Liberal arts and sciences, general studies, and humanities .....</b>	<b>211</b>	<b>3,167</b>	<b>228,197</b>	<b>44,947</b>	<b>3,960</b>	<b>102</b>	<b>-</b>
24.01	Liberal arts and sciences, general studies, and humanities .....	211	3,167	228,197	44,947	3,960	102	-
24.0101	Liberal arts and sciences/liberal studies....	166	2,138	176,470	29,155	2,727	5	-
24.0102	General studies .....	27	953	32,871	9,982	92	6	-
24.0103	Humanities/humanistic studies .....	-	32	6,101	3,041	716	64	-
24.0199	Liberal arts and sciences, general studies and humanities, other .....	18	44	12,755	2,769	425	27	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title	Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
<b>25. Library science .....</b>	<b>214</b>	<b>82</b>	<b>114</b>	<b>74</b>	<b>6,090</b>	<b>112</b>	<b>-</b>
25.01 Library science/librarianship .....	10	8	4	73	5,914	99	-
25.03 Library assistant .....	203	74	109	1	-	-	-
25.99 Library science, other .....	1	-	1	-	176	13	-
<b>26. Biological and biomedical sciences .....</b>	<b>38</b>	<b>35</b>	<b>1,486</b>	<b>64,227</b>	<b>7,877</b>	<b>5,440</b>	<b>-</b>
26.01 Biology, general .....	10	3	1,334	46,001	2,744	838	-
26.0101 Biology/biological sciences, general .....	10	3	1,334	45,133	2,561	718	-
26.0102 Biomedical sciences, general .....	-	-	-	868	183	120	-
26.02 Biochemistry, biophysics and molecular biology .....	-	-	1	5,137	513	929	-
26.0202 Biochemistry .....	-	-	1	4,015	242	499	-
26.0203 Biophysics .....	-	-	-	50	54	78	-
26.0204 Molecular biology .....	-	-	-	593	123	200	-
26.0205 Molecular biochemistry .....	-	-	-	140	12	54	-
26.0206 Molecular biophysics .....	-	-	-	-	-	11	-
26.0207 Structural biology .....	-	-	-	-	-	6	-
26.0209 Radiation biology/radiobiology .....	-	-	-	2	12	9	-
26.021 Biochemistry/biophysics and molecular biology .....	-	-	-	293	69	66	-
26.0299 Biochemistry, biophysics and molecular biology, other .....	-	-	-	44	1	6	-
26.03 Botany/plant biology .....	-	-	3	236	183	246	-
26.0301 Botany/plant biology .....	-	-	3	211	106	149	-
26.0305 Plant pathology/phytopathology .....	-	-	-	8	66	70	-
26.0307 Plant physiology .....	-	-	-	-	1	12	-
26.0308 Plant molecular biology .....	-	-	-	-	1	9	-
26.0399 Botany/plant biology, other .....	-	-	-	17	9	6	-
26.04 Cell/cellular biology and anatomical sciences .....	-	-	1	2,239	344	593	-
26.0401 Cell/cellular biology and histology .....	-	-	-	439	31	138	-
26.0403 Anatomy .....	-	-	1	88	146	57	-
26.0404 Developmental biology and embryology .....	-	-	-	-	2	25	-
26.0405 Neuroanatomy .....	-	-	-	-	-	4	-
26.0406 Cell/cellular and molecular biology .....	-	-	-	1,329	80	246	-
26.0407 Cell biology and anatomy .....	-	-	-	4	6	14	-
26.0499 Cell/cellular biology and anatomical sciences, other .....	-	-	-	379	79	109	-
26.05 Microbiological sciences and immunology .....	3	-	1	2,617	353	603	-
26.0502 Microbiology, general .....	3	-	1	1,622	196	138	-
26.0503 Medical microbiology and bacteriology .....	-	-	-	893	94	224	-
26.0504 Virology .....	-	-	-	-	2	13	-
26.0505 Parasitology .....	-	-	-	-	-	4	-
26.0507 Immunology .....	-	-	-	-	20	125	-
26.0599 Microbiological sciences and immunology, other .....	-	-	-	102	41	99	-
26.07 Zoology/animal biology .....	-	-	6	2,517	371	247	-
26.0701 Zoology/animal biology .....	-	-	3	2,002	143	91	-
26.0702 Entomology .....	-	-	-	91	156	106	-
26.0707 Animal physiology .....	-	-	-	234	44	33	-
26.0708 Animal behavior and ethology .....	-	-	-	3	2	6	-
26.0709 Wildlife biology .....	-	-	2	118	14	1	-
26.0788 Physiology, human and animal .....	-	-	-	69	12	10	-
26.0799 Zoology/animal biology, other .....	-	-	1	-	-	-	-
26.08 Genetics .....	-	-	-	461	200	312	-
26.0801 Genetics, general .....	-	-	-	258	45	91	-
26.0802 Molecular genetics .....	-	-	-	81	22	60	-
26.0804 Animal genetics .....	-	-	-	117	27	61	-
26.0805 Plant genetics .....	-	-	-	4	12	12	-
26.0806 Human/medical genetics .....	-	-	-	-	86	59	-
26.0888 Genetics, plant and animal .....	-	-	-	-	5	22	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title	Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
26.0899 Genetics, other .....	-	-	-	1	3	7	-
26.09 Physiology, pathology, and related sciences	7	-	17	866	535	449	-
26.0901 Physiology, general .....	6	-	17	385	335	115	-
26.0902 Molecular physiology .....	-	-	-	-	5	9	-
26.0903 Cell physiology .....	-	-	-	-	3	10	-
26.0904 Endocrinology .....	-	-	-	-	4	7	-
26.0905 Reproductive biology .....	-	-	-	-	1	3	-
26.0906 Neurobiology and neurophysiology .....	1	-	-	168	19	67	-
26.0907 Cardiovascular science .....	-	-	-	-	-	2	-
26.0908 Exercise physiology .....	-	-	-	233	31	1	-
26.0909 Vision science/physiological optics .....	-	-	-	26	1	8	-
26.091 Pathology/experimental pathology .....	-	-	-	10	122	169	-
26.0911 Oncology and cancer biology .....	-	-	-	-	12	47	-
26.0999 Physiology, pathology, and related sciences, other .....	-	-	-	44	2	11	-
26.1 Pharmacology and toxicology .....	-	1	-	121	194	382	-
26.1001 Pharmacology .....	-	-	-	48	98	223	-
26.1002 Molecular pharmacology .....	-	-	-	-	11	24	-
26.1003 Neuropharmacology .....	-	-	-	-	5	2	-
26.1004 Toxicology .....	-	1	-	36	62	85	-
26.1005 Molecular toxicology .....	-	-	-	-	-	3	-
26.1006 Environmental toxicology .....	-	-	-	15	11	23	-
26.1007 Pharmacology and toxicology .....	-	-	-	22	7	22	-
26.11 Biomathematics and bioinformatics .....	-	-	-	80	380	117	-
26.1101 Biometry/biometrics .....	-	-	-	16	66	18	-
26.1102 Biostatistics .....	-	-	-	17	201	85	-
26.1103 Bioinformatics .....	-	-	-	44	109	12	-
26.1199 Biomathematics and bioinformatics, other	-	-	-	3	4	2	-
26.12 Biotechnology .....	7	14	29	421	407	11	-
26.13 Ecology, evolution, systematics and population biology .....	2	4	22	2,102	993	407	-
26.1301 Ecology .....	-	-	1	637	222	133	-
26.1302 Marine biology and biological oceanography .....	2	4	18	831	148	42	-
26.1303 Evolutionary biology .....	-	-	-	7	21	32	-
26.1304 Aquatic biology/limnology .....	-	-	-	60	9	-	-
26.1305 Environmental biology .....	-	-	3	128	13	2	-
26.1306 Population biology .....	-	-	-	-	2	13	-
26.1307 Conservation biology .....	-	-	-	132	30	-	-
26.1308 Systematic biology/biological systematics	-	-	-	-	-	-	-
26.1309 Epidemiology .....	-	-	-	-	529	150	-
26.1399 Ecology, evolution, systematics and population biology, other .....	-	-	-	307	19	35	-
26.99 Biological and biomedical sciences, other .....	9	13	72	1,429	660	306	-
<b>27. Mathematics and statistics .....</b>	<b>85</b>	<b>8</b>	<b>802</b>	<b>15,163</b>	<b>4,256</b>	<b>1,137</b>	<b>-</b>
27.01 Mathematics .....	43	5	799	13,320	2,267	730	-
27.0101 Mathematics, general .....	43	5	799	13,179	2,267	725	-
27.0199 Mathematics, other .....	-	-	-	141	-	5	-
27.03 Applied mathematics .....	1	-	-	1,150	538	165	-
27.0301 Applied mathematics .....	1	-	-	960	454	154	-
27.0303 Computational mathematics .....	-	-	-	92	13	7	-
27.0399 Applied mathematics, other .....	-	-	-	98	71	4	-
27.05 Statistics .....	-	3	1	544	1,317	237	-
27.0501 Statistics, general .....	-	3	1	532	1,313	235	-
27.0502 Mathematical statistics and probability .....	-	-	-	4	-	1	-
27.0599 Statistics, other .....	-	-	-	8	4	1	-
27.99 Mathematics and statistics, other .....	41	-	2	149	134	5	-
<b>29. Military technologies .....</b>	<b>76</b>	<b>-</b>	<b>293</b>	<b>10</b>	<b>-</b>	<b>-</b>	<b>-</b>
29.01 Military technologies .....	76	-	293	10	-	-	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title	Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
<b>30. Multi/interdisciplinary studies.....</b>	<b>405</b>	<b>353</b>	<b>14,817</b>	<b>30,548</b>	<b>4,387</b>	<b>1,150</b>	<b>-</b>
30.01 Biological and physical sciences .....	16	-	7,255	1,683	317	41	-
30.05 Peace studies and conflict resolution .....	2	15	-	226	366	10	-
30.06 Systems science and theory .....	-	-	-	42	127	6	-
30.08 Mathematics and computer science .....	-	-	5	397	42	14	-
30.1 Biopsychology .....	-	-	-	121	2	-	-
30.11 Gerontology .....	54	38	23	172	276	37	-
30.12 Historic preservation and conservation .....	12	3	-	133	132	6	-
30.1201 Historic preservation and conservation .....	12	3	-	133	130	6	-
30.1202 Cultural resource management and policy analysis.....	-	-	-	-	2	-	-
30.13 Medieval and renaissance studies .....	5	1	-	53	17	6	-
30.14 Museology/museum studies .....	1	-	2	22	229	-	-
30.15 Science, technology, and society .....	16	-	5	410	117	15	-
30.16 Accounting and computer science.....	14	8	30	12	-	-	-
30.17 Behavioral sciences .....	-	-	38	1,022	140	18	-
30.18 Natural sciences .....	-	-	76	438	82	-	-
30.19 Nutrition sciences .....	-	-	2	488	398	94	-
30.2 International/global studies.....	-	3	18	1,715	97	-	-
30.21 Holocaust and related studies .....	-	-	-	-	14	-	-
30.22 Classical and ancient studies .....	-	-	-	189	7	8	-
30.2201 Ancient studies/civilization .....	-	-	-	114	6	3	-
30.2202 Classical/ancient Mediterranean/Near Eastern studies and archaeology .....	-	-	-	75	1	5	-
30.23 Intercultural/multicultural and diversity studies .....	-	-	-	97	68	-	-
30.24 Neuroscience .....	-	-	-	1,197	75	301	-
30.25 Cognitive science .....	-	-	-	478	9	14	-
30.99 Multi/interdisciplinary studies, other .....	285	285	7,363	21,653	1,872	580	-
<b>31. Parks, recreation, leisure, and fitness studies.....</b>	<b>290</b>	<b>150</b>	<b>929</b>	<b>22,575</b>	<b>3,220</b>	<b>225</b>	<b>-</b>
31.01 Parks, recreation, and leisure studies .....	78	4	88	2,687	300	22	-
31.03 Parks, recreation, and leisure facilities management.....	36	65	220	2,711	214	20	-
31.05 Health and physical education/fitness .....	174	70	522	16,959	2,701	178	-
31.0501 Health and physical education, general .....	38	26	213	7,727	935	27	-
31.0504 Sport and fitness administration/management.....	89	33	171	2,990	782	15	-
31.0505 Kinesiology and exercise science .....	10	6	51	5,459	886	118	-
31.0599 Health and physical education/fitness, other .....	37	5	87	783	98	18	-
31.99 Parks, recreation, leisure, and fitness studies, other .....	2	11	99	218	5	5	-
<b>38. Philosophy and religious studies .....</b>	<b>14</b>	<b>46</b>	<b>415</b>	<b>13,582</b>	<b>1,674</b>	<b>650</b>	<b>-</b>
38.01 Philosophy .....	-	-	99	7,753	713	371	-
38.0101 Philosophy .....	-	-	99	7,591	694	365	-
38.0102 Logic .....	-	-	-	11	7	6	-
38.0103 Ethics.....	-	-	-	40	12	-	-
38.0199 Philosophy, other .....	-	-	-	111	-	-	-
38.02 Religion/religious studies.....	14	46	316	5,290	760	240	-
38.0201 Religion/religious studies.....	9	43	50	4,821	620	229	-
38.0202 Buddhist studies .....	-	-	-	-	-	-	-
38.0203 Christian studies.....	-	3	9	181	33	8	-
38.0205 Islamic studies.....	-	-	-	1	2	-	-
38.0206 Jewish/Judaic studies.....	5	-	256	253	101	3	-
38.0299 Religion/religious studies, other .....	-	-	1	34	4	-	-
38.99 Philosophy and religious studies, other.....	-	-	-	539	201	39	-
<b>39. Theology and religious vocations .....</b>	<b>222</b>	<b>1,001</b>	<b>616</b>	<b>9,750</b>	<b>6,411</b>	<b>2,063</b>	<b>6,396</b>

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
39.02	Bible/biblical studies .....	26	713	381	3,194	593	42	-
39.03	Missions/missionary studies and missiology	-	6	15	361	317	84	-
39.04	Religious education .....	2	26	57	1,021	592	275	-
39.05	Religious/sacred music .....	19	2	3	182	123	5	-
39.06	Theological and ministerial studies.....	153	240	126	3,306	3,533	1,275	6,386
39.0601	Theology/theological studies .....	21	64	64	1,538	2,704	918	-
39.0602	Divinity/ministry (BD, MDiv).....	-	-	-	-	-	-	6,225
39.0604	Pre-theology/pre-ministerial studies .....	-	12	21	212	11	-	-
39.0605	Rabbinical studies (MHL/Rav).....	-	-	-	-	-	-	157
39.0606	Talmudic studies .....	-	10	-	859	309	40	-
39.0699	Theological and ministerial studies, other	132	154	41	697	509	317	4
39.07	Pastoral counseling and specialized ministries .....	14	4	9	1,118	860	188	10
39.0701	Pastoral studies/counseling.....	14	2	6	417	763	178	10
39.0702	Youth ministry .....	-	-	-	547	29	-	-
39.0799	Pastoral counseling and specialized ministries, other .....	-	2	3	154	68	10	-
39.99	Theology and religious vocations, other .....	8	10	25	568	393	194	-
<b>40.</b>	<b>Physical sciences.....</b>	<b>392</b>	<b>15</b>	<b>1,621</b>	<b>19,421</b>	<b>5,585</b>	<b>3,983</b>	<b>-</b>
40.01	Physical sciences .....	-	3	973	259	31	2	-
40.02	Astronomy and astrophysics .....	-	-	1	329	150	104	-
40.0201	Astronomy .....	-	-	1	191	96	69	-
40.0202	Astrophysics .....	-	-	-	107	30	32	-
40.0203	Planetary astronomy and science .....	-	-	-	5	7	3	-
40.0299	Astronomy and astrophysics, other .....	-	-	-	26	17	-	-
40.04	Atmospheric sciences and meteorology.....	1	-	2	576	179	82	-
40.0401	Atmospheric sciences and meteorology, general.....	1	-	-	484	170	79	-
40.0403	Atmospheric physics and dynamics .....	-	-	-	6	-	-	-
40.0404	Meteorology.....	-	-	2	78	9	3	-
40.0499	Atmospheric sciences and meteorology, other .....	-	-	-	8	-	-	-
40.05	Chemistry .....	119	4	280	9,968	2,031	2,124	-
40.0501	Chemistry, general.....	119	4	280	9,597	1,899	2,004	-
40.0502	Analytical chemistry .....	-	-	-	9	25	14	-
40.0503	Inorganic chemistry .....	-	-	-	-	1	3	-
40.0504	Organic chemistry .....	-	-	-	-	7	10	-
40.0506	Physical and theoretical chemistry .....	-	-	-	5	3	8	-
40.0507	Polymer chemistry.....	-	-	-	7	53	51	-
40.0508	Chemical physics .....	-	-	-	5	-	2	-
40.0599	Chemistry, other .....	-	-	-	345	43	32	-
40.06	Geological and earth sciences/geosciences	244	-	39	3,471	1,400	479	-
40.0601	Geology/earth science, general.....	-	-	22	2,955	1,053	265	-
40.0602	Geochemistry .....	-	-	-	6	13	2	-
40.0603	Geophysics and seismology.....	-	-	-	68	80	57	-
40.0604	Paleontology.....	-	-	-	1	1	-	-
40.0605	Hydrology and water resources science ...	-	-	3	22	11	5	-
40.0606	Geochemistry and petrology .....	-	-	-	-	-	-	-
40.0607	Oceanography, chemical and physical .....	241	-	14	163	143	94	-
40.0699	Geological and earth sciences/geosciences, other .....	3	-	-	256	99	56	-
40.08	Physics, general .....	28	8	193	4,563	1,638	1,171	-
40.0801	Physics, general.....	24	8	166	4,347	1,428	1,053	-
40.0802	Atomic/molecular physics .....	-	-	-	23	9	2	-
40.0806	Nuclear physics .....	-	-	-	-	2	9	-
40.0807	Optics/optical sciences .....	4	-	27	44	67	37	-
40.0809	Acoustics .....	-	-	-	9	13	8	-
40.081	Theoretical and mathematical physics .....	-	-	-	11	-	-	-
40.0899	Physics, other.....	-	-	-	129	119	62	-
40.99	Physical sciences, other.....	-	-	133	255	156	21	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title	Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
<b>41. Science technologies/technicians .....</b>	<b>170</b>	<b>237</b>	<b>1,137</b>	<b>196</b>	<b>31</b>	<b>2</b>	<b>-</b>
41.01 Biology technician/biotechnology laboratory technician .....	75	57	181	31	2	2	-
41.02 Nuclear and industrial radiologic technologies/technicians .....	16	26	54	-	4	-	-
41.0204 Industrial radiologic technology/technician .....	-	26	16	-	-	-	-
41.0205 Nuclear/nuclear power technology/technician .....	16	-	32	-	4	-	-
41.0299 Nuclear and industrial radiologic technologies/technicians, other .....	-	-	6	-	-	-	-
41.03 Physical science technologies/technicians .....	78	100	585	17	-	-	-
41.0301 Chemical technology/technician .....	78	100	580	16	-	-	-
41.0399 Physical science technologies/technicians, other .....	-	-	5	1	-	-	-
41.99 Science technologies/technicians, other .....	1	54	317	148	25	-	-
<b>42. Psychology .....</b>	<b>172</b>	<b>33</b>	<b>1,897</b>	<b>87,104</b>	<b>18,618</b>	<b>5,907</b>	<b>-</b>
42.01 Psychology, general .....	103	18	1,772	82,286	4,589	1,511	-
42.02 Clinical psychology .....	-	-	-	119	2,018	2,150	-
42.03 Cognitive psychology and psycholinguistics .....	-	-	-	95	24	10	-
42.04 Community psychology .....	-	-	24	170	302	-	-
42.06 Counseling psychology .....	-	6	-	433	6,332	462	-
42.07 Developmental and child psychology .....	-	-	-	488	133	47	-
42.08 Experimental psychology .....	-	-	-	272	49	52	-
42.09 Industrial and organizational psychology .....	10	-	-	371	1,342	90	-
42.1 Personality psychology .....	-	-	-	29	-	-	-
42.11 Physiological psychology/psychobiology .....	-	-	-	517	5	33	-
42.16 Social psychology .....	-	4	1	912	89	50	-
42.17 School psychology .....	-	-	-	-	1,221	759	-
42.18 Educational psychology .....	-	-	-	168	1,312	433	-
42.19 Psychometrics and quantitative psychology .....	-	-	-	-	56	-	-
42.2 Clinical child psychology .....	-	-	-	-	11	15	-
42.21 Environmental psychology .....	-	-	-	32	16	-	-
42.23 Health psychology .....	-	-	-	12	22	5	-
42.24 Psychopharmacology .....	-	-	-	-	8	-	-
42.25 Family psychology .....	3	3	3	22	12	-	-
42.26 Forensic psychology .....	-	-	-	9	125	15	-
42.99 Psychology, other .....	56	2	97	1,169	952	275	-
<b>43. Security and protective services .....</b>	<b>22,611</b>	<b>5,594</b>	<b>20,685</b>	<b>29,633</b>	<b>3,824</b>	<b>66</b>	<b>-</b>
43.01 Criminal justice and corrections .....	16,734	3,909	17,152	29,193	3,753	63	-
43.0102 Corrections .....	4,249	299	866	516	31	-	-
43.0103 Criminal justice/law enforcement administration .....	411	184	3,204	7,653	1,705	15	-
43.0104 Criminal justice/safety studies .....	344	430	4,332	18,137	1,396	46	-
43.0106 Forensic science and technology .....	265	24	173	243	379	-	-
43.0107 Criminal justice/police science .....	9,787	2,818	8,168	1,406	38	2	-
43.0109 Security and loss prevention services .....	927	40	44	42	5	-	-
43.011 Juvenile corrections .....	83	4	6	-	-	-	-
43.0111 Criminalistics and criminal science .....	185	43	-	135	-	-	-
43.0112 Securities services administration/management .....	-	-	51	-	11	-	-
43.0113 Corrections administration .....	2	-	4	71	13	-	-
43.0199 Corrections and criminal justice, other .....	481	67	304	990	175	-	-
43.02 Fire protection .....	5,526	1,430	3,012	396	55	1	-
43.0201 Fire protection and safety technology/technician .....	833	143	1,215	159	3	-	-
43.0202 Fire services administration .....	61	23	195	154	4	-	-
43.0203 Fire science/fire-fighting .....	4,590	1,262	1,579	50	15	-	-
43.0299 Fire protection, other .....	42	2	23	33	33	1	-
43.99 Security and protective services, other .....	351	255	521	44	16	2	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title	Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
<b>44. Public administration and social services professions .....</b>	<b>815</b>	<b>479</b>	<b>3,762</b>	<b>21,478</b>	<b>28,631</b>	<b>779</b>	<b>-</b>
44.00 Human services, general.....	431	237	771	1,298	87	13	-
44.02 Community organization and advocacy .....	56	154	1,107	2,292	801	9	-
44.04 Public administration and social services professions .....	53	19	48	2,603	8,278	198	-
44.05 Public policy analysis .....	-	-	2	917	1,669	136	-
44.07 Social work .....	185	24	1,452	13,545	16,814	352	-
44.0701 Social work .....	173	19	1,434	13,523	16,750	352	-
44.0702 Youth services/administration.....	-	4	-	13	23	-	-
44.0799 Social work, other.....	12	1	18	9	41	-	-
44.99 Public administration and social services professions, other.....	90	45	382	823	982	71	-
<b>45. Social sciences.....</b>	<b>222</b>	<b>107</b>	<b>5,909</b>	<b>133,340</b>	<b>13,949</b>	<b>3,239</b>	<b>-</b>
45.01 Social sciences, general.....	2	17	4,589	8,632	633	16	-
45.02 Anthropology .....	10	2	91	8,065	1,095	560	-
45.0201 Anthropology .....	10	2	91	8,038	1,073	559	-
45.0202 Physical anthropology .....	-	-	-	-	10	-	-
45.0299 Anthropology, other.....	-	-	-	27	12	1	-
45.03 Archaeology.....	30	4	4	191	19	18	-
45.04 Criminology .....	18	-	26	4,714	381	13	-
45.05 Demography and population studies.....	-	-	-	-	22	8	-
45.06 Economics.....	2	-	266	26,982	2,834	964	-
45.0601 Economics, general.....	-	-	266	25,864	2,262	913	-
45.0602 Applied economics .....	-	-	-	245	173	25	-
45.0603 Econometrics and quantitative economics.....	-	-	-	145	2	-	-
45.0604 Development economics and international development.....	-	-	-	112	241	7	-
45.0605 International economics .....	2	-	-	217	124	10	-
45.0699 Economics, other.....	-	-	-	399	32	9	-
45.07 Geography and cartography.....	100	72	82	4,678	841	235	-
45.0701 Geography.....	20	30	29	4,477	800	235	-
45.0702 Cartography.....	65	42	47	114	15	-	-
45.0799 Geography, other.....	15	-	6	87	26	-	-
45.09 International relations and affairs .....	12	2	10	7,309	3,157	58	-
45.1 Political science and government.....	21	-	201	39,704	1,900	670	-
45.1001 Political science and government, general.....	13	-	188	38,830	1,753	663	-
45.1002 American government and politics (United States).....	-	-	12	114	117	1	-
45.1003 Canadian government and politics .....	-	-	-	-	-	-	-
45.1099 Political science and government, other....	8	-	1	760	30	6	-
45.11 Sociology.....	26	5	553	29,809	2,012	584	-
45.12 Urban studies/affairs.....	-	-	2	883	394	46	-
45.99 Social sciences, other .....	1	5	85	2,373	661	67	-
<b>46. Construction trades .....</b>	<b>7,941</b>	<b>11,524</b>	<b>3,569</b>	<b>120</b>	<b>-</b>	<b>-</b>	<b>-</b>
46.00 Construction trades, general .....	101	149	156	-	-	-	-
46.01 Mason/masonry.....	549	338	37	-	-	-	-
46.02 Carpentry/carpenter .....	1,504	1,790	532	-	-	-	-
46.03 Electrical and power transmission installers.....	2,753	6,071	1,764	1	-	-	-
46.0301 Electrical and power transmission installation/installer, general .....	154	127	156	-	-	-	-
46.0302 Electrician.....	2,567	5,432	1,463	1	-	-	-
46.0303 Lineworker.....	14	437	127	-	-	-	-
46.0399 Electrical and power transmission installers, other .....	18	75	18	-	-	-	-
46.04 Building/construction finishing, management, and inspection .....	1,357	1,539	599	85	-	-	-
46.0401 Building/property maintenance and management.....	716	1,057	107	-	-	-	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
46.0402	Concrete finishing/concrete finisher .....	7	3	-	-	-	-	-
46.0403	Building/home/construction inspection/inspector .....	255	188	101	5	-	-	-
46.0404	Drywall installation/drywaller .....	35	-	-	-	-	-	-
46.0406	Glazier .....	15	-	-	-	-	-	-
46.0408	Painting/painter and wall coverer .....	94	3	1	-	-	-	-
46.041	Roofer .....	12	-	-	-	-	-	-
46.0411	Metal building assembly/assembler .....	34	5	-	-	-	-	-
46.0412	Building/construction site management/manager .....	52	113	79	1	-	-	-
46.0499	Building/construction finishing, management, and inspection, other .....	137	170	311	79	-	-	-
46.05	Plumbing and related water supply services	882	910	185	-	-	-	-
46.0502	Pipefitting/pipefitter and sprinkler fitter .....	143	104	49	-	-	-	-
46.0503	Plumbing technology/plumber .....	682	757	26	-	-	-	-
46.0504	Well drilling/driller .....	-	1	3	-	-	-	-
46.0588	Plumber and pipefitter .....	13	45	107	-	-	-	-
46.0599	Plumbing and related water supply services, other .....	44	3	-	-	-	-	-
46.99	Construction trades, other .....	795	727	296	34	-	-	-
<b>47.</b>	<b>Mechanic and repair technologies/technicians .....</b>	<b>17,514</b>	<b>43,113</b>	<b>12,967</b>	<b>190</b>	<b>1</b>	<b>-</b>	<b>-</b>
47.00	Mechanics and repairers, general .....	-	28	-	-	-	-	-
47.01	Electrical/electronics maintenance and repair technology .....	3,437	3,688	2,343	29	1	-	-
47.0101	Electrical/electronics equipment installation and repair, general .....	888	1,249	755	-	-	-	-
47.0102	Business machine repair .....	3	30	13	-	-	-	-
47.0103	Communications systems installation and repair technology .....	279	153	313	-	-	-	-
47.0104	Computer installation and repair technology/technician .....	1,240	1,225	475	29	-	-	-
47.0105	Industrial electronics technology/technician .....	825	589	698	-	-	-	-
47.0106	Appliance installation and repair technology/technician .....	25	160	16	-	-	-	-
47.0199	Electrical/electronics maintenance and repair technology, other .....	177	282	73	-	1	-	-
47.02	Heating, air conditioning, ventilation, and refrigeration maintenance .....	3,302	7,276	1,061	-	-	-	-
47.03	Heavy/industrial equipment maintenance technologies .....	1,488	1,699	661	16	-	-	-
47.0302	Heavy equipment maintenance technology/technician .....	100	228	196	14	-	-	-
47.0303	Industrial mechanics and maintenance technology .....	1,312	1,265	407	2	-	-	-
47.0399	Heavy/industrial equipment maintenance technologies, other .....	76	206	58	-	-	-	-
47.04	Precision systems maintenance and repair technologies .....	282	1,103	150	-	-	-	-
47.0402	Gunsmithing/gunsmith .....	59	40	96	-	-	-	-
47.0403	Locksmithing and safe repair .....	28	13	-	-	-	-	-
47.0404	Musical instrument fabrication and repair .....	83	77	25	-	-	-	-
47.0408	Watchmaking and jewelrymaking .....	88	174	14	-	-	-	-
47.0409	Parts and warehousing operations/maintenance technology/technician .....	-	8	-	-	-	-	-
47.0499	Precision systems maintenance and repair technologies, other .....	24	791	15	-	-	-	-
47.06	Vehicle maintenance and repair technologies .....	8,762	28,658	8,481	144	-	-	-
47.0603	Autobody/collision and repair technology/technician .....	1,237	3,164	718	-	-	-	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
47.0604	Automobile/automotive mechanics technology/technician .....	5,706	16,444	4,949	11	-	-	-
47.0605	Diesel mechanics technology/technician...	703	2,340	1,393	30	-	-	-
47.0606	Small engine mechanics and repair technology/technician .....	248	398	9	-	-	-	-
47.0607	Airframe mechanics and aircraft maintenance technology/technician ...	170	1,651	550	62	-	-	-
47.0608	Aircraft powerplant technology/technician .	226	1,512	228	1	-	-	-
47.0609	Avionics maintenance technology/ technician .....	25	527	383	40	-	-	-
47.0611	Motorcycle maintenance and repair technology/technician .....	285	1,940	7	-	-	-	-
47.0612	Vehicle emissions inspection/maintenance technology/technician .....	39	-	-	-	-	-	-
47.0613	Medium/heavy vehicle and truck technology/technician .....	32	50	15	-	-	-	-
47.0615	Engine machinist .....	7	14	2	-	-	-	-
47.0616	Marine maintenance/fitter and ship repair technology/technician .....	49	325	32	-	-	-	-
47.0699	Vehicle maintenance and repair technologies, other .....	35	293	195	-	-	-	-
47.99	Mechanic and repair technologies/ technicians, other .....	243	661	271	1	-	-	-
<b>48.</b>	<b>Precision production.....</b>	<b>6,404</b>	<b>7,657</b>	<b>1,968</b>	<b>61</b>	<b>13</b>	<b>-</b>	<b>-</b>
48.00	Precision production trades, general .....	-	-	2	-	-	-	-
48.03	Leatherworking and upholstery .....	94	120	10	-	-	-	-
48.0303	Upholstery/upholsterer .....	94	120	-	-	-	-	-
48.0304	Shoe, boot, and leather repair .....	-	-	-	-	-	-	-
48.0399	Leatherworking and upholstery, other .....	-	-	10	-	-	-	-
48.05	Precision metal working .....	5,986	6,959	1,737	15	-	-	-
48.0501	Machine tool technology/machinist .....	650	872	566	-	-	-	-
48.0503	Machine shop technology/assistant .....	651	1,096	215	-	-	-	-
48.0506	Sheet metal technology/sheetworking .....	92	191	57	-	-	-	-
48.0507	Tool and die technology/technician.....	89	320	235	2	-	-	-
48.0508	Welding technology/welder.....	4,417	4,433	633	13	-	-	-
48.0509	Ironworking/ironworker .....	33	-	-	-	-	-	-
48.0599	Precision metal working, other .....	54	47	31	-	-	-	-
48.07	Woodworking .....	300	365	105	46	13	-	-
48.0701	Woodworking, general.....	4	18	5	-	-	-	-
48.0702	Furniture design and manufacturing.....	44	31	13	46	13	-	-
48.0703	Cabinetmaking and millwork/millwright .....	252	293	82	-	-	-	-
48.0799	Woodworking, other.....	-	23	5	-	-	-	-
48.99	Precision production, other.....	24	213	114	-	-	-	-
<b>49.</b>	<b>Transportation and materials moving .....</b>	<b>20,882</b>	<b>1,817</b>	<b>1,220</b>	<b>4,905</b>	<b>740</b>	<b>-</b>	<b>-</b>
49.01	Air transportation .....	2,219	71	1,175	4,630	708	-	-
49.0101	Aeronautics/aviation/aerospace science and technology, general .....	52	8	308	2,507	4	-	-
49.0102	Airline/commercial/professional pilot and flight crew .....	600	50	592	1,111	594	-	-
49.0104	Aviation/airway management and operations.....	137	2	159	862	68	-	-
49.0105	Air traffic controller.....	128	1	86	126	-	-	-
49.0106	Airline flight attendant .....	748	10	16	-	-	-	-
49.0108	Flight instructor.....	3	-	-	-	-	-	-
49.0199	Air transportation, other .....	551	-	14	24	42	-	-
49.02	Ground transportation .....	18,070	994	21	-	-	-	-
49.0202	Construction/heavy equipment/earthmoving equipment operation .....	234	270	7	-	-	-	-
49.0205	Truck and bus driver/commercial vehicle operation.....	16,847	706	3	-	-	-	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
49.0299	Ground transportation, other .....	989	18	11	-	-	-	-
49.03	Marine transportation .....	239	727	19	258	-	-	-
49.0303	Commercial fishing .....	-	-	-	-	-	-	-
49.0304	Diver, professional and instructor .....	218	695	17	-	-	-	-
49.0309	Marine science/merchant marine officer ...	21	32	1	258	-	-	-
49.0399	Marine transportation, other .....	-	-	1	-	-	-	-
49.99	Transportation and materials moving, other .	354	25	5	17	32	-	-
<b>50.</b>	<b>Visual and performing arts .....</b>	<b>5,374</b>	<b>6,185</b>	<b>24,038</b>	<b>80,529</b>	<b>13,452</b>	<b>1,520</b>	<b>-</b>
50.01	Visual and performing arts, general.....	11	73	760	1,997	135	9	-
50.02	Crafts/craft design, folk art and artisanry.....	123	6	4	169	11	-	-
50.03	Dance, general .....	20	38	93	1,782	222	13	-
50.0301	Dance, general .....	20	38	93	1,710	216	8	-
50.0302	Ballet .....	-	-	-	44	6	-	-
50.0399	Dance, other .....	-	-	-	28	-	5	-
50.04	Design and applied arts.....	1,297	3,657	16,316	16,323	1,188	6	-
50.0401	Design and visual communications, general.....	214	552	2,447	3,179	207	3	-
50.0402	Commercial and advertising art.....	533	1,535	5,788	3,409	236	2	-
50.0404	Industrial design .....	5	2	108	1,231	115	-	-
50.0406	Commercial photography .....	101	269	504	3	15	-	-
50.0407	Fashion/apparel design .....	47	205	2,259	1,287	13	-	-
50.0408	Interior design.....	214	521	2,352	2,680	189	-	-
50.0409	Graphic design .....	181	484	1,882	3,026	140	-	-
50.041	Illustration .....	2	8	196	860	25	-	-
50.0499	Design and applied arts, other .....	-	81	780	648	248	1	-
50.05	Drama/theatre arts and stagecraft.....	164	709	667	9,620	1,502	94	-
50.0501	Drama and dramatics/theatre arts, general	39	124	367	8,697	1,157	88	-
50.0502	Technical theatre/theatre design and technology .....	22	12	208	241	79	-	-
50.0504	Playwriting and screenwriting .....	-	1	4	76	74	3	-
50.0505	Theatre literature, history, and criticism....	-	1	-	49	7	3	-
50.0506	Acting.....	103	66	83	264	112	-	-
50.0507	Directing and theatrical production.....	-	8	-	22	33	-	-
50.0508	Theatre/theatre arts management.....	-	-	-	25	5	-	-
50.0588	Acting and directing .....	-	4	-	45	-	-	-
50.0599	Dramatic/theatre arts and stagecraft, other	-	493	5	201	35	-	-
50.06	Film/video and photographic arts .....	273	490	1,879	6,347	1,011	31	-
50.0601	Film/cinema studies.....	28	1	4	1,862	287	24	-
50.0602	Cinematography and film/video production	97	89	1,189	2,053	481	7	-
50.0605	Photography .....	148	292	591	1,590	198	-	-
50.0699	Film/video and photographic arts, other ....	-	108	95	842	45	-	-
50.07	Fine and studio art.....	2,883	250	1,459	30,060	3,864	281	-
50.0701	Art/art studies, general .....	14	4	814	13,658	848	20	-
50.0702	Fine/studio arts, general.....	2	5	247	8,131	1,164	8	-
50.0703	Art history, criticism, and conservation ....	-	-	-	3,254	607	249	-
50.0704	Arts management .....	-	5	8	389	285	4	-
50.0705	Drawing .....	9	16	41	252	38	-	-
50.0706	Intermedia/multimedia .....	16	80	130	783	81	-	-
50.0708	Painting .....	-	30	7	784	226	-	-
50.0709	Sculpture .....	5	12	10	304	78	-	-
50.071	Printmaking .....	13	7	-	153	54	-	-
50.0711	Ceramic arts and ceramics.....	5	2	12	226	66	-	-
50.0712	Fiber, textile, and weaving arts.....	-	2	1	124	35	-	-
50.0713	Metal and jewelry arts .....	2,792	86	57	116	29	-	-
50.0799	Fine arts and art studies, other.....	27	1	132	1,886	353	-	-
50.08	Music .....	421	890	2,604	13,715	5,052	1,059	-
50.0901	Music, general .....	25	71	509	7,123	1,543	444	-
50.0902	Music history, literature, and theory.....	-	-	-	131	33	11	-
50.0903	Music performance, general.....	-	256	135	3,664	2,227	371	-
50.0904	Music theory and composition.....	3	3	8	441	207	57	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
50.0905	Musicology and ethnomusicology .....	-	-	-	46	46	29	-
50.0906	Conducting .....	-	-	-	3	100	24	-
50.0907	Piano and organ .....	-	3	5	121	180	31	-
50.0908	Voice and opera .....	-	3	3	231	209	31	-
50.0909	Music management and merchandising....	59	119	110	925	6	-	-
50.091	Jazz/jazz studies .....	-	-	3	183	84	9	-
50.0911	Violin, viola, guitar, and other stringed instruments .....	-	4	-	103	140	12	-
50.0912	Music pedagogy .....	-	1	-	54	26	4	-
50.0999	Music, other .....	334	430	1,831	690	251	36	-
50.99	Visual and performing arts, other .....	182	72	256	516	467	27	-
<b>51.</b>	<b>Health professions and related clinical sciences .....</b>	<b>149,969</b>	<b>131,911</b>	<b>109,251</b>	<b>75,821</b>	<b>46,968</b>	<b>5,197</b>	<b>38,573</b>
51.00	Health services/allied health/health sciences, general.....	135	161	105	1,962	160	24	-
51.01	Chiropractic (DC).....	-	-	-	-	-	-	2,730
51.02	Communication disorder sciences and services .....	52	5	117	5,605	5,392	719	-
51.0201	Communication disorders, general.....	1	-	5	1,614	1,272	30	-
51.0202	Audiology/audiologist and hearing sciences.....	-	-	4	106	105	608	-
51.0203	Speech-language pathology/pathologist ...	29	-	37	801	1,506	17	-
51.0204	Audiology/audiologist and speech-language pathology/pathologist.....	18	2	25	3,014	2,431	58	-
51.0299	Communication disorders sciences and services, other .....	4	3	46	70	78	6	-
51.04	Dentistry (DDS, DMD).....	-	-	-	-	-	-	4,464
51.05	Advanced/graduate dentistry and oral sciences (Cert, MS, PhD).....	-	-	-	-	513	85	396
51.0501	Dental clinical sciences, general (MS, PhD) .....	-	-	-	-	236	48	39
51.0502	Advanced general dentistry (Cert, MS, PhD) .....	-	-	-	-	12	-	142
51.0503	Oral biology and oral pathology (MS, PhD)	-	-	-	-	52	12	-
51.0504	Dental public health and education (Cert, MS/MPH, PhD/DPH) .....	-	-	-	-	3	-	4
51.0505	Dental materials (MS, PhD).....	-	-	-	-	2	-	-
51.0506	Endodontics/endodontology (Cert, MS, PhD) .....	-	-	-	-	13	5	40
51.0507	Oral/maxillofacial surgery (Cert, MS, PhD)	-	-	-	-	-	-	17
51.0508	Orthodontics/orthodontology (Cert, MS, PhD) .....	-	-	-	-	65	8	48
51.0509	Pediatric dentistry/pedodontics (Cert, MS, PhD) .....	-	-	-	-	13	-	41
51.051	Periodontics/periodontology (Cert, MS, PhD) .....	-	-	-	-	27	2	25
51.0511	Prosthodontics/prosthodontology (Cert, MS, PhD).....	-	-	-	-	26	-	25
51.0599	Advanced/graduate dentistry and oral sciences, other .....	-	-	-	-	64	10	15
51.06	Dental support services and allied professions .....	6,210	7,392	5,828	1,278	15	-	-
51.0601	Dental assisting/assistant .....	5,892	6,906	914	1	-	-	-
51.0602	Dental hygiene/hygienist .....	49	241	4,744	1,266	8	-	-
51.0603	Dental laboratory technology/technician ...	140	217	153	4	4	-	-
51.0699	Dental services and allied professions, other .....	129	28	17	7	3	-	-
51.07	Health and medical administrative services .	21,831	16,050	6,429	3,363	4,151	100	-
51.0701	Health/health care administration/management.....	155	259	99	2,242	3,207	76	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
51.0702	Hospital and health care facilities administration/management .....	18	40	2	367	549	11	-
51.0703	Health unit coordinator/ward clerk .....	867	35	25	-	-	-	-
51.0704	Health unit manager/ward supervisor .....	-	-	4	2	40	-	-
51.0705	Medical office management/administration .....	2,677	1,304	765	1	3	-	-
51.0706	Health information/medical records administration/administrator .....	740	845	185	446	21	-	-
51.0707	Health information/medical records technology/technician .....	1,639	1,925	2,078	1	6	1	-
51.0708	Medical transcription/transcriptionist .....	1,244	1,211	145	-	-	-	-
51.0709	Medical office computer specialist/assistant .....	198	59	68	-	-	-	-
51.071	Medical office assistant/specialist .....	1,859	1,757	327	-	-	-	-
51.0711	Medical/health management and clinical assistant/specialist .....	569	41	96	14	22	-	-
51.0712	Medical reception/receptionist .....	716	105	9	-	-	-	-
51.0713	Medical insurance coding specialist/coder .....	1,477	1,052	104	-	-	-	-
51.0714	Medical insurance specialist/medical biller .....	2,214	974	93	-	-	-	-
51.0715	Health/medical claims examiner .....	37	-	-	2	-	-	-
51.0716	Medical administrative/executive assistant and medical secretary .....	4,384	5,556	2,107	1	-	-	-
51.0717	Medical staff services technology/technician .....	28	-	1	-	-	-	-
51.0799	Health and medical administrative services, other .....	3,009	887	321	287	303	12	-
51.08	Allied health and medical assisting services .....	43,866	35,261	15,830	273	84	-	-
51.0801	Medical/clinical assistant .....	33,659	28,565	8,507	9	-	-	-
51.0802	Clinical/medical laboratory assistant .....	769	121	75	1	-	-	-
51.0803	Occupational therapist assistant .....	2	33	1,080	1	-	-	-
51.0805	Pharmacy technician/assistant .....	4,879	4,166	746	-	-	-	-
51.0806	Physical therapist assistant .....	335	91	2,456	20	-	-	-
51.0808	Veterinary/animal health technology/technician/veterinary assistant .....	739	345	2,394	232	2	-	-
51.0809	Anesthesiologist assistant .....	-	-	5	-	28	-	-
51.081	Emergency care attendant (EMT ambulance) .....	63	-	-	-	-	-	-
51.0811	Pathology/pathologist assistant .....	-	-	-	-	19	-	-
51.0812	Respiratory therapy technician/assistant .....	-	115	69	-	-	-	-
51.0813	Chiropractic assistant/technician .....	-	1	2	-	-	-	-
51.0899	Allied health and medical assisting services, other .....	3,420	1,824	496	10	35	-	-
51.09	Allied health diagnostic, intervention, and treatment professions .....	18,530	15,995	16,692	5,257	3,529	25	-
51.0901	Cardiovascular technology/technologist .....	796	937	328	35	5	-	-
51.0902	Electrocardiograph technology/technician .....	253	53	14	3	-	-	-
51.0903	Electroneurodiagnostic/electroencephalographic technology/technician .....	3	18	22	-	-	-	-
51.0904	Emergency medical technology/technician (EMT paramedic) .....	15,436	3,314	1,639	93	6	-	-
51.0905	Nuclear medical technology/technologist .....	36	214	307	227	-	-	-
51.0906	Perfusion technology/perfusionist .....	-	-	-	11	32	-	-
51.0907	Medical radiologic technology/science - radiation therapist .....	904	1,983	5,783	732	16	-	-
51.0908	Respiratory care therapy/therapist .....	23	738	3,641	398	-	-	-
51.0909	Surgical technology/technologist .....	495	5,573	1,757	-	-	-	-
51.091	Diagnostic medical sonography/sonographer and ultrasound technician .....	115	1,811	861	216	-	-	-
51.0911	Radiologic technology/science - radiographer .....	179	766	1,980	298	5	2	-
51.0912	Physician assistant .....	41	221	130	1,443	3,275	23	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
51.0913	Athletic training/trainer.....	7	12	57	1,648	174	—	—
51.0916	Radiation protection/health physics technician .....	—	—	4	11	2	—	—
51.0999	Allied health diagnostic/intervention/treatment professions, other.....	242	355	169	142	14	—	—
51.1	Clinical/medical laboratory science and allied professions.....	3,867	1,361	1,789	1,820	270	5	—
51.1001	Blood bank technology specialist .....	528	—	—	—	—	—	—
51.1002	Cytotechnology/cytotechnologist.....	4	25	—	66	17	—	—
51.1003	Hematology technology/technician.....	259	63	—	—	4	—	—
51.1004	Clinical/medical laboratory technician .....	295	761	1,681	46	3	—	—
51.1005	Clinical laboratory science/medical technology/technologist.....	—	46	39	1,633	213	—	—
51.1006	Ophthalmic laboratory technology/technician .....	20	—	—	—	—	—	—
51.1007	Histologic technology/histotechnologist....	—	11	1	—	—	—	—
51.1008	Histologic technician.....	9	55	13	—	—	—	—
51.1009	Phlebotomy/phlebotomist .....	1,777	143	—	—	—	—	—
51.101	Cytogenetics/genetics/clinical genetics technology/technologist.....	—	—	—	5	9	—	—
51.1011	Renal/dialysis technologist/technician.....	247	123	—	—	—	—	—
51.1099	Clinical/medical laboratory science and allied professions, other.....	728	134	55	70	24	5	—
51.11	Health/medical preparatory programs .....	86	9	819	1,591	197	—	—
51.1101	Pre-dentistry studies.....	—	—	29	78	12	—	—
51.1102	Pre-medicine/pre-medical studies .....	—	—	182	718	142	—	—
51.1103	Pre-pharmacy studies .....	—	—	136	100	—	—	—
51.1104	Pre-veterinary studies .....	—	5	54	258	—	—	—
51.1105	Pre-nursing studies .....	—	3	151	5	—	—	—
51.1199	Health/medical preparatory programs, other .....	86	1	267	432	43	—	—
51.12	Medicine (MD).....	—	—	—	—	—	—	15,803
51.14	Medical clinical sciences/graduate medical studies .....	—	—	—	—	90	26	—
51.15	Mental and social health services and allied professions .....	3,737	1,672	2,651	1,558	2,332	200	—
51.1501	Substance abuse/addiction counseling.....	590	859	851	121	143	7	—
51.1502	Psychiatric/mental health services technician .....	215	526	954	83	16	—	—
51.1503	Clinical/medical social work.....	8	1	80	111	276	7	—
51.1504	Community health services/liaison/counseling .....	78	26	91	799	161	1	—
51.1505	Marriage and family therapy/counseling....	1	—	—	9	1,040	135	—
51.1506	Clinical pastoral counseling/patient counseling .....	—	—	—	—	60	12	—
51.1507	Psychoanalysis and psychotherapy .....	—	—	—	—	23	10	—
51.1508	Mental health counseling/counselor.....	—	—	22	—	237	18	—
51.1509	Genetic counseling/counselor .....	—	—	—	—	45	—	—
51.1599	Mental and social health services and allied professions, other.....	2,845	260	653	435	331	10	—
51.16	Nursing .....	34,707	45,059	54,656	42,166	12,298	831	—
51.1601	Nursing/registered nurse (RN, ASN, BSN, MSN) .....	986	4,738	52,886	39,869	4,826	303	—
51.1602	Nursing administration (MSN, MS, PhD) ...	—	1	25	225	645	9	—
51.1603	Adult health nurse/nursing.....	—	—	137	61	278	19	—
51.1604	Nurse anesthetist .....	—	1	—	—	999	21	—
51.1605	Family practice nurse/nurse practitioner ...	—	—	3	25	1,048	63	—
51.1606	Maternal/child health and neonatal nurse/nursing.....	—	—	7	—	201	7	—
51.1607	Nurse midwife/nursing midwifery.....	—	—	—	—	77	2	—
51.1608	Nursing science (MS, PhD).....	—	—	—	518	1,750	206	—
51.1609	Pediatric nurse/nursing.....	—	—	—	—	129	2	—

— Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
51.161	Psychiatric/mental health nurse/nursing....	-	-	-	-	130	21	-
51.1611	Public health/community nurse/nursing....	10	-	-	-	228	-	-
51.1612	Perioperative/operating room and surgical nurse/nursing.....	122	-	-	-	34	-	-
51.1613	Licensed practical/vocational nurse training.....	2,406	36,484	1,179	-	-	-	-
51.1614	Nurse/nursing assistant/aide and patient care assistant .....	29,530	1,260	4	-	-	-	-
51.1616	Clinical nurse specialist.....	-	-	-	-	95	-	-
51.1617	Critical care nursing.....	-	-	-	-	24	-	-
51.1618	Occupational and environmental health nursing.....	-	-	-	-	5	-	-
51.1699	Nursing, other.....	1,653	2,575	415	1,468	1,829	178	-
51.17	Optometry (OD).....	-	-	-	-	-	-	1,321
51.18	Ophthalmic and optometric support services and allied professions.....	407	101	329	30	93	1	-
51.1801	Opticianry/ophthalmic dispensing optician.....	270	14	176	-	-	-	-
51.1802	Optometric technician/assistant .....	124	55	107	-	-	-	-
51.1803	Ophthalmic technician/technologist.....	13	28	42	8	3	-	-
51.1804	Orthoptics/orthoptist .....	-	-	-	-	-	-	-
51.1899	Ophthalmic/optometric support services and allied professions, other.....	-	4	4	22	90	1	-
51.19	Osteopathic medicine/osteopathy (DO) .....	-	-	-	-	-	-	2,722
51.2	Pharmacy, pharmaceutical sciences, and administration .....	77	55	27	1,023	531	331	8,234
51.2001	Pharmacy (PharmD [USA], PharmD or BS/BPharm [Canada]).....	-	-	-	625	-	-	8,234
51.2002	Pharmacy administration/policy/regulatory affairs (MS, PhD).....	-	-	24	-	142	21	-
51.2003	Pharmaceutics and drug design (MS, PhD) .....	-	-	-	180	98	149	-
51.2004	Medicinal and pharmaceutical chemistry (MS, PhD).....	-	-	-	27	28	60	-
51.2005	Natural products chemistry and pharmacognosy (MS, PhD) .....	-	-	-	-	1	13	-
51.2006	Clinical and industrial drug development (MS, PhD).....	-	-	-	1	16	-	-
51.2007	Pharmacoeconomics/pharmaceutical economics (MS, PhD).....	-	-	-	-	-	2	-
51.2008	Clinical, hospital, and managed care pharmacy (MS, PhD).....	-	-	-	-	2	-	-
51.2009	Industrial and physical pharmacy and cosmetic sciences (MS, PhD).....	-	-	-	-	135	4	-
51.2099	Pharmacy, pharmaceutical sciences, and administration, other.....	77	55	3	190	109	82	-
51.21	Podiatric medicine/podiatry (DPM).....	-	-	-	-	-	-	382
51.22	Public health.....	31	20	35	1,480	6,121	428	-
51.2201	Public health, general (MPH, DPH).....	7	6	5	345	3,913	225	-
51.2202	Environmental health.....	-	3	10	164	319	44	-
51.2205	Health/medical physics.....	-	8	-	12	26	2	-
51.2206	Occupational health and industrial hygiene.....	-	-	5	75	104	14	-
51.2207	Public health education and promotion .....	1	-	1	423	433	38	-
51.2208	Community health and preventive medicine .....	1	-	5	177	93	15	-
51.2209	Maternal and child health .....	-	-	-	-	66	5	-
51.221	International public health/international health.....	-	-	-	1	100	-	-
51.2211	Health services administration .....	22	3	-	106	296	8	-
51.2299	Public health, other.....	-	-	9	177	771	77	-
51.23	Rehabilitation and therapeutic professions ..	327	247	892	4,113	7,540	2,057	-
51.2301	Art therapy/therapist .....	3	-	-	73	261	3	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
51.2302	Dance therapy/therapist .....	-	-	-	-	36	-	-
51.2305	Music therapy/therapist .....	1	2	-	254	53	-	-
51.2306	Occupational therapy/therapist.....	-	-	71	1,855	1,817	181	-
51.2307	Orthotist/prosthetist .....	4	42	57	21	5	77	-
51.2308	Physical therapy/therapist .....	-	1	107	591	4,215	1,727	-
51.2309	Therapeutic recreation/recreational therapy.....	43	9	41	379	17	3	-
51.231	Vocational rehabilitation counseling/ counselor .....	1	-	16	201	756	15	-
51.2311	Kinesiotherapy/kinesiotherapist.....	-	8	-	18	-	-	-
51.2312	Assistive/augmentative technology and rehabilitation engineering .....	2	-	-	-	-	1	-
51.2399	Rehabilitation and therapeutic professions, other.....	273	185	600	721	380	50	-
51.24	Veterinary medicine (DVM) .....	-	-	-	-	-	-	2,228
51.25	Veterinary biomedical and clinical sciences (Cert, MS, PhD).....	-	21	10	49	227	146	-
51.2501	Veterinary sciences/veterinary clinical sciences, general (Cert,MS,PhD).....	-	18	-	30	184	104	-
51.2502	Veterinary anatomy (Cert,MS,PhD).....	-	-	-	3	3	3	-
51.2503	Veterinary physiology (Cert,MS,PhD).....	-	-	-	4	4	6	-
51.2504	Veterinary microbiology and immunobiology (Cert,MS,PhD).....	-	-	-	-	12	7	-
51.2505	Veterinary pathology and pathobiology (Cert,MS,PhD).....	-	-	-	-	1	8	-
51.2506	Veterinary toxicology and pharmacology (Cert,MS,PhD).....	-	-	-	4	-	-	-
51.2507	Large animal/food animal and equine surgery/medicine (Cert,MS,PhD).....	-	1	-	-	3	5	-
51.2509	Comparative and laboratory animal medicine (Cert,MS,PhD).....	-	-	-	-	2	-	-
51.251	Veterinary preventive medicine epidemiology and public health (Cert,MS,PhD).....	-	2	7	5	11	2	-
51.2511	Veterinary infectious diseases (Cert,MS,PhD).....	-	-	-	-	2	-	-
51.2599	Veterinary biomedical and clinical sciences, other (Cert,MS,PhD).....	-	-	3	3	5	11	-
51.26	Health aides/attendants/orderlies.....	3,011	194	62	-	-	-	-
51.2601	Health aide .....	1,275	118	12	-	-	-	-
51.2602	Home health aide/home attendant .....	1,121	12	31	-	-	-	-
51.2603	Medication aide .....	426	-	-	-	-	-	-
51.2699	Health aides/attendants/orderlies, other....	189	64	19	-	-	-	-
51.27	Medical illustration and informatics .....	-	-	1	20	162	23	-
51.2703	Medical illustration/medical illustrator.....	-	-	1	20	58	-	-
51.2706	Medical informatics.....	-	-	-	-	104	23	-
51.31	Dietetics and clinical nutrition services.....	91	41	280	1,370	471	19	-
51.3101	Dietetics/dietitian (RD).....	19	15	30	1,294	217	19	-
51.3102	Clinical nutrition/nutritionist.....	-	-	-	8	55	-	-
51.3103	Dietetic technician (DTR) .....	-	-	81	-	-	-	-
51.3104	Dietitian assistant .....	66	26	154	-	-	-	-
51.3188	Dietetics/human nutritional services.....	-	-	15	46	164	-	-
51.3199	Dietetics and clinical nutrition services, other .....	6	-	-	22	35	-	-
51.32	Bioethics/medical ethics .....	-	-	-	-	97	6	-
51.33	Alternative and complementary medicine and medical systems.....	8	41	-	34	1,811	25	285
51.3301	Acupuncture .....	-	24	-	34	960	-	-
51.3302	Traditional Chinese/Asian medicine and Chinese herbology.....	-	2	-	-	521	4	-
51.3303	Naturopathic medicine/naturopathy (ND)..	-	-	-	-	-	21	285
51.3388	Acupuncture and Oriental medicine .....	-	-	-	-	324	-	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
51.3399	Alternative and complementary medicine and medical systems, other.....	8	15	—	—	6	—	—
51.34	Alternative and complementary medical support services .....	—	26	14	5	—	3	—
51.3401	Direct entry midwifery (LM, CPM).....	—	22	—	3	—	3	—
51.3499	Alternative and complementary medical support services, other .....	—	4	14	2	—	—	—
51.35	Somatic bodywork and related therapeutical services .....	11,807	7,280	2,059	2	—	—	—
51.3501	Massage therapy/therapeutic massage ....	11,779	7,280	2,059	2	—	—	—
51.3502	Asian bodywork therapy .....	20	—	—	—	—	—	—
51.3599	Somatic bodywork and related therapeutic services, other .....	8	—	—	—	—	—	—
51.36	Movement and mind-body therapies and education .....	67	217	—	18	18	6	—
51.3601	Movement therapy and movement education .....	—	87	—	18	18	5	—
51.3602	Yoga teacher training/yoga therapy .....	40	—	—	—	—	—	—
51.3603	Hypnotherapy/hypnotherapist .....	27	130	—	—	—	1	—
51.37	Energy and biologically based therapies .....	8	—	—	19	—	—	—
51.3702	Herbalism/herbalist.....	4	—	—	19	—	—	—
51.3703	Polarity therapy .....	4	—	—	—	—	—	—
51.99	Health professions and related clinical sciences, other .....	1,114	703	626	2,785	866	137	—
<b>52.</b>	<b>Business, management, marketing, and related support services .....</b>	<b>40,366</b>	<b>29,782</b>	<b>94,111</b>	<b>328,989</b>	<b>146,595</b>	<b>1,843</b>	<b>—</b>
52.01	Business/commerce, general .....	2,180	1,594	13,458	25,822	10,003	222	—
52.02	Business administration, management, and operations.....	5,767	3,975	36,105	132,006	88,436	829	—
52.0201	Business administration and management, general.....	3,928	2,789	32,157	119,969	81,885	760	—
52.0202	Purchasing, procurement/acquisitions, and contracts management .....	84	2	52	337	217	—	—
52.0203	Logistics and materials management.....	165	61	97	1,592	275	—	—
52.0204	Office management and supervision .....	558	659	1,129	1,025	10	—	—
52.0205	Operations management and supervision .....	604	299	831	2,565	1,089	11	—
52.0206	Non-profit/public/organizational management.....	4	2	8	438	410	4	—
52.0207	Customer service management .....	30	—	7	17	—	—	—
52.0208	E-commerce/electronic commerce .....	79	46	114	233	862	—	—
52.0209	Transportation/transportation management.....	—	—	—	134	16	—	—
52.0299	Business administration, management, and operations, other.....	315	117	1,710	5,696	3,672	54	—
52.03	Accounting and related services.....	5,400	5,406	14,822	38,800	8,859	122	—
52.0301	Accounting .....	2,315	1,681	7,227	37,914	8,421	118	—
52.0302	Accounting technology/technician and bookkeeping .....	2,470	3,221	6,504	95	3	—	—
52.0303	Auditing .....	—	—	—	41	41	—	—
52.0304	Accounting and finance .....	42	3	6	72	156	—	—
52.0305	Accounting and business/management.....	12	18	385	349	43	—	—
52.0399	Accounting and related services, other .....	561	483	700	329	195	4	—
52.04	Business operations support and assistant services .....	13,518	13,304	11,869	731	49	—	—
52.0401	Administrative assistant and secretarial science, general .....	5,326	7,345	8,104	464	—	—	—
52.0402	Executive assistant/executive secretary....	1,072	558	1,827	19	—	—	—
52.0406	Receptionist.....	164	111	6	—	—	—	—
52.0407	Business/office automation/technology/ data entry.....	2,162	1,720	1,295	94	—	—	—

— Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
52.0408	General office occupations and clerical services .....	1,898	2,734	334	45	-	-	-
52.0409	Parts, warehousing, and inventory management operations .....	-	2	-	-	-	-	-
52.0411	Customer service support/call center/ teleservice operation .....	1,849	7	3	-	-	-	-
52.0499	Business operations support and secretarial services, other .....	1,047	827	300	109	49	-	-
52.05	Business/corporate communications .....	13	8	15	447	109	-	-
52.06	Business/managerial economics .....	12	8	45	4,376	339	60	-
52.07	Entrepreneurial and small business operations .....	812	194	316	1,387	1,089	1	-
52.0701	Entrepreneurship/entrepreneurial studies .....	568	89	210	1,249	1,030	-	-
52.0702	Franchising and franchise operations .....	12	-	-	-	-	-	-
52.0703	Small business administration/ management .....	175	90	78	116	42	-	-
52.0799	Entrepreneurial and small business operations, other .....	57	15	28	22	17	1	-
52.08	Finance and financial management services .....	758	762	698	32,361	7,046	66	-
52.0801	Finance, general .....	9	25	265	30,778	5,722	45	-
52.0803	Banking and financial support services .....	699	705	388	480	238	3	-
52.0804	Financial planning and services .....	4	17	7	123	295	2	-
52.0806	International finance .....	-	-	-	13	122	-	-
52.0807	Investments and securities .....	19	-	-	643	290	-	-
52.0808	Public finance .....	-	-	-	3	-	14	-
52.0809	Credit management .....	-	-	16	-	-	-	-
52.0899	Finance and financial management services, other .....	27	15	22	321	379	2	-
52.09	Hospitality administration/management .....	863	692	2,808	6,319	610	15	-
52.0901	Hospitality administration/management, general .....	146	167	686	3,204	275	8	-
52.0903	Tourism and travel services management .....	392	246	643	453	152	-	-
52.0904	Hotel/motel administration/management .....	138	206	1,012	1,622	124	2	-
52.0905	Restaurant/food services management .....	11	23	163	277	39	-	-
52.0906	Resort management .....	2	1	18	16	-	-	-
52.0988	Hotel/motel and restaurant management .....	19	41	108	230	6	-	-
52.0999	Hospitality administration/management, other .....	155	8	178	517	14	5	-
52.1	Human resources management and services .....	896	687	636	11,179	8,673	258	-
52.1001	Human resources management/personnel administration, general .....	806	319	388	6,142	3,926	100	-
52.1002	Labor and industrial relations .....	14	351	193	979	631	8	-
52.1003	Organizational behavior studies .....	-	4	1	3,217	3,458	149	-
52.1004	Labor studies .....	-	6	8	102	14	1	-
52.1005	Human resources development .....	64	-	-	232	234	-	-
52.1099	Human resources management and services, other .....	12	7	46	507	410	-	-
52.11	International business .....	180	70	366	6,114	3,439	37	-
52.12	Management information systems and services .....	950	1,370	4,290	17,371	7,715	47	-
52.1201	Management information systems, general .....	686	770	3,600	16,813	7,503	47	-
52.1206	Information resources management/CIO training .....	1	21	6	36	67	-	-
52.1207	Knowledge management .....	-	-	-	14	29	-	-
52.1299	Management information systems and services, other .....	263	579	684	508	116	-	-
52.13	Management sciences and quantitative methods .....	11	2	117	5,496	1,964	17	-
52.1301	Management science, general .....	-	2	115	4,647	1,440	8	-
52.1302	Business statistics .....	-	-	-	36	17	5	-

- Data not available

Table VII-1. Earned awards and degrees by field of study, 2003-04 — Continued

2000 Classification of Instructional Program (CIP) code and title		Awards of less than 1 academic year	1- to 4- year awards	Associate degrees	Bachelor's degrees	Master's degrees or post-baccalaureate certificates	Doctoral degrees or post-master's certificates	First professional degrees or certificates
52.1304	Actuarial science .....	-	-	1	348	84	-	-
52.1399	Management sciences and quantitative methods, other.....	11	-	1	465	423	4	-
52.14	Marketing.....	362	207	1,983	36,158	3,301	57	-
52.1401	Marketing/marketing management, general.....	309	178	1,847	34,398	2,952	54	-
52.1402	Marketing research.....	1	-	-	89	150	2	-
52.1403	International marketing.....	15	26	73	122	100	-	-
52.1499	Marketing, other .....	37	3	63	1,549	99	1	-
52.15	Real estate .....	2,314	211	215	937	489	34	-
52.16	Taxation .....	48	4	-	-	1,310	13	-
52.17	Insurance.....	204	20	-	784	51	2	-
52.18	General sales, merchandising, and related marketing operations.....	3,767	467	1,688	2,817	513	3	-
52.1801	Sales, distribution, and marketing operations, general.....	282	270	610	1,809	501	3	-
52.1802	Merchandising and buying operations.....	-	-	1	158	2	-	-
52.1803	Retailing and retail operations.....	178	70	321	167	3	-	-
52.1804	Selling skills and sales operations.....	3,274	101	335	289	-	-	-
52.1899	General merchandising/sales/related marketing operations, other.....	33	26	421	394	7	-	-
52.19	Specialized sales, merchandising, and marketing operations.....	1,921	617	3,221	2,284	96	-	-
52.1901	Auctioneering.....	13	-	-	-	-	-	-
52.1902	Fashion merchandising .....	36	62	2,292	1,503	20	-	-
52.1903	Fashion modeling .....	7	-	31	-	-	-	-
52.1904	Apparel and accessories marketing operations.....	18	1	94	103	4	-	-
52.1905	Tourism and travel services marketing operations.....	338	204	297	27	-	-	-
52.1906	Tourism promotion operations .....	11	159	190	189	-	-	-
52.1907	Vehicle and vehicle parts and accessories marketing operations.....	-	54	104	155	-	-	-
52.1908	Business and personal/financial services marketing operations.....	1,374	1	95	25	-	-	-
52.1909	Special products marketing operations .....	122	109	14	146	13	-	-
52.191	Hospitality and recreation marketing operations.....	-	25	73	88	-	-	-
52.1999	Specialized merchandising, sales, and marketing operations, other.....	2	2	31	48	59	-	-
52.2	Construction management .....	29	7	17	796	74	-	-
52.99	Business, management, marketing, and related support services, other .....	361	177	1,442	2,804	2,430	60	-
<b>54.</b>	<b>History .....</b>	<b>17</b>	<b>1</b>	<b>372</b>	<b>32,558</b>	<b>2,561</b>	<b>1,013</b>	<b>-</b>
54.01	History .....	17	1	372	32,558	2,561	1,013	-
54.0101	History, general.....	-	1	355	31,989	2,440	924	-
54.0102	American history (United States).....	17	-	9	54	19	15	-
54.0103	European history .....	-	-	-	19	5	-	-
54.0104	History and philosophy of science and technology .....	-	-	-	147	25	20	-
54.0105	Public/applied history and archival administration .....	-	-	3	19	26	35	-
54.0106	Asian history .....	-	-	-	-	1	5	-
54.0199	History, other .....	-	-	5	330	45	14	-

- Data not available

# Appendix. Sources of State and Local Labor Market and Career Information

State employment security agencies develop detailed information about local labor markets, such as information on current and projected employment by occupation and industry, characteristics of the workforce, and changes in State and local area economic activity. Listed in this appendix are the Internet addresses of these agencies and addresses and telephone numbers of their directors of research and analysis. State occupational projections also are available on the Internet at <http://www.projectionscentral.com>.

## Alabama

Director, Labor Market Information Division, Alabama Department of Industrial Relations, 649 Monroe St., Room 422, Montgomery, AL 36131.  
Telephone: (334) 242-8859.  
Internet: <http://dir.alabama.gov>

## Alaska

Chief, Research and Analysis Section, Department of Labor and Workforce Development, P.O. Box 25501, Juneau, AK 99802-5501.  
Telephone: (907) 465-4518.  
Internet: <http://almis.labor.state.ak.us>

## Arizona

Research Administrator, Arizona Department of Economic Security, P.O. Box 6123 SC 733A, Phoenix, AZ 85005-6123.  
Telephone: (602) 542-5984.  
Internet: <http://www.workforce.az.gov>

## Arkansas

Division Chief, Labor Market Information, Department of Workforce Services, P.O. Box 2981, Little Rock, AR 72203-2981.  
Telephone: (501) 682-3198.  
Internet: <http://www.arkansas.gov/esd>

## California

Chief, State of California Employment Development Department, Labor Market Information Division, P.O. Box 826880, Sacramento, CA 94280-0001.  
Telephone: (916) 262-2160.  
Internet: <http://www.calmis.cahwnet.gov>

## Colorado

Director, Labor Market Information, Colorado Department of Labor and Employment, 633 17th St., Suite 600, Denver, CO 80202-3660.  
Telephone: (303) 318-8850.  
Internet: <http://www.coworkforce.com/lmi>

## Connecticut

Director, Office of Research, Connecticut Department of Labor, 200 Folly Brook Blvd., Wethersfield, CT 06109-1114.  
Telephone: (860) 263-6275.  
Internet: <http://www.ctdol.state.ct.us/lmi>

## Delaware

Chief, Office of Occupational and Labor Market Information, Department of Labor, 4425 N. Market St.-Fox Valley Annex, Wilmington, DE 19809-1307.  
Telephone: (302) 761-8069.  
Internet: <http://www.delawareworks.com/oolmi/welcome.shtml>

## District of Columbia

Chief, Office of Labor Market Research and Information, 64 New York Ave. NE., Suite 3035, Washington, D.C. 20002.  
Telephone: (202) 671-1633.  
Internet: <http://www.does.dc.gov/does>

## Florida

Director, Labor Market Statistics, Agency for Workforce Innovation, MSC G-020, 107 E. Madison St., Tallahassee, FL 32399-4111.  
Telephone: (850) 245-7205.  
Internet: <http://www.labormarketinfo.com>

## Georgia

Director, Workforce Information and Analysis, Room 300, Department of Labor, 223 Courtland St., CWC Building, Atlanta, GA 30303.  
Telephone: (404) 232-3875.  
Internet: [http://www.dol.state.ga.us/em/get\\_labor\\_market\\_information.htm](http://www.dol.state.ga.us/em/get_labor_market_information.htm)

## Guam

Chief Economist, Guam Department of Labor, P.O. Box 9970, Tamuning, Guam 96931.  
Telephone: (671) 475-7062.

**Hawaii**

Chief, Research and Statistics Office, Department of Labor and Industrial Relations, 830 Punchbowl St., Room 304, Honolulu, HI 96813.

Telephone: (808) 586-8999.

Internet: <http://www.hiwi.org>

**Idaho**

Chief, Research and Analysis Bureau, Department of Commerce and Labor, 317 West Main St., Boise, ID 83735-0670.

Telephone: (208) 332-3570.

Internet: <http://lmi.idaho.gov>

**Illinois**

Deputy Director of Workforce and Career Information, Illinois Department of Employment Security, Economic Information and Analysis Division, 33 S. State St., 9th Floor, Chicago, IL 60603.

Telephone: (312) 793-2316.

Internet: <http://lmi.ides.state.il.us>

**Indiana**

Director, Research and Analysis—Indiana Workforce Development, SE 211, 10 North Senate Ave., Indianapolis, IN 46204-2277.

Telephone: (317) 232-7460.

Internet: <http://www.in.gov/dwd>

**Iowa**

Policy and Information Division, Iowa Workforce Development, 1000 East Grand Ave., Des Moines, IA 50319-0209.

Telephone: (515) 281-6642

Internet: <http://www.iowaworkforce.org/lmi>

**Kansas**

Director, Kansas Department of Labor, Labor Market Information Services, 401 SW Topeka Blvd., Topeka, KS 66603-3182.

Telephone: (785) 296-5058.

Internet: <http://laborstats.dol.ks.gov>

**Kentucky**

Research and Statistics Branch, Office of Employment and Training, 275 East Main St.—Mail Stop 2-WG, Frankfort, KY 40621.

Telephone: (502) 564-7976.

Internet: <http://www.workforcekentucky.ky.gov>

**Louisiana**

Director, Research and Statistics Division, Department of Labor, 1001 North 23rd St., Baton Rouge, LA 70804-9094.

Telephone: (225) 342-3141.

Internet: <http://www.laworks.net>

**Maine**

Director, Labor Market Information Services Division, Maine Department of Labor, 19 Union St., Augusta, ME 04332.

Telephone: (207) 287-2271.

Internet: <http://www.state.me.us/labor/lmis/index.html>

**Maryland**

Maryland Department of Labor Licensing and Regulation, Office of Labor Market Analysis and Information, Room 316, 1100 N. Eutaw, Baltimore, MD 21201.

Telephone: (410) 767-2250.

Internet: <http://www.dllr.state.md.us/lmi/index.htm>

**Massachusetts**

Assistant Director of Economic Research, Massachusetts Division of Unemployment Assistance, 19 Staniford St., Boston, MA 02421.

Telephone: (617) 626-6556.

Internet: <http://www.detma.org/LMIdataprog.htm>

**Michigan**

Director, Bureau of Labor Market Information and Strategic Initiatives, Department of Labor and Economic Growth, 3032 West Grand Blvd., Suite 9-100, Detroit, MI 48202.

Telephone: (313) 456-3100.

Internet: <http://www.michlmi.org>

**Minnesota**

Research Director, Department of Employment and Economic Development, Labor Market Information Office, 1st National Bank Building, 332 Minnesota St., Suite E200, St. Paul, MN 55101-1351.

Telephone: (651) 296-6545.

Internet: <http://www.deed.state.mn.us/lmi>

**Mississippi**

Chief, Labor Market Information Division, Mississippi Department of Employment Security, 1235 Echelon Pkwy., Jackson, MS 39213.

Telephone: (601) 321-6262.

Internet: <http://mdes.ms.gov>

**Missouri**

LMI Research Manager, Missouri Economic Research and Information Center, P.O. Box 3150, Jefferson City, MO 65101-3150.

Telephone: (573) 751-3637.

Internet: <http://www.missourieconomy.org>

**Montana**

Research and Analysis Bureau, P.O. Box 1728, Helena, MT 59624.

Telephone: (406) 444-2430.

Internet: <http://www.ourfactsyourfuture.org>

**Nebraska**

Administrator, Nebraska Workforce Development—Labor Market Information, Nebraska Department of Labor, P.O. Box 4600, Lincoln, NE 68509-4600.

Telephone: (402) 471-2600.

Internet: <http://www.dol.state.ne.us/nelmi.htm>

**Nevada**

Chief, Research and Analysis, Department of Employment Training and Rehabilitation, 500 East Third St., Carson City, NV 89713-0020.

Telephone: (775) 684-0387.

Internet: <http://www.detr.state.nv.us/lmi/index.htm>

**New Hampshire**

Director, Economic and Labor Market Information Bureau, New Hampshire Employment Security, 32 South Main St., Concord, NH 03301-4857.

Telephone: (603) 228-4123.

Internet: <http://www.nhes.state.nh.us/elmi>

**New Jersey**

Director, Division of Labor Market and Demographic Research, Department of Labor and Workforce Development, P.O. Box 388, Trenton, NJ 08625-0388.

Telephone: (609) 984-2593.

Internet: <http://www.state.nj.us/labor/lra>

**New Mexico**

Research Chief, New Mexico Department of Labor, Economic Research and Analysis, 501 Mountain Road NE., Albuquerque, NM 87102.

Telephone: (505) 222-4684.

Internet: [http://www.dol.state.nm.us/dol\\_lmif.html](http://www.dol.state.nm.us/dol_lmif.html)

**New York**

Director, Research and Statistics, New York State Department of Labor, State Office Campus, Room 400, Albany, NY 12240.

Telephone: (518) 457-3805.

Internet: <http://www.labor.state.ny.us/workforceindustry-data/index.asp>

**North Carolina**

Director, Labor Market Information Division, Employment Security Commission, 700 Wade Ave., Raleigh, NC 27605.

Telephone: (919) 733-2936.

Internet: <http://www.ncesc.com>

**North Dakota**

Labor Market Information Manager, Job Service North Dakota, P.O. Box 5507, Bismarck, ND 58506-5507.

Telephone: (701) 328-3136.

Internet: <http://www.jobsnd.com/data/index.html>

**Ohio**

Director, Bureau of Labor Market Information, Office of Workforce Development, Ohio Department of Job and Family Services, 4300 Kimberly Pkwy., Columbus, OH 43232.

Telephone: (614) 752-9494.

Internet: <http://www.ohioworkforceinformer.org>

**Oklahoma**

Labor Market Information, Oklahoma Employment Security Commission, P.O. Box 52003, Oklahoma City, OK 73152.

Telephone: (405) 557-7221.

Internet: <http://www.oesc.state.ok.us/lmi/default.htm>

**Oregon**

Oregon Employment Department, Attention: Research Division, Room 207, 875 Union St. NE., Salem, OR 97311.

Telephone: (503) 947-1200.

Internet: <http://www.qualityinfo.org/olmisj/OlmisZine>

**Pennsylvania**

Director, Center for Workforce Information & Analysis, Pennsylvania Department of Labor and Industry, 220 Labor and Industry Building, Seventh and Forster Sts., Harrisburg, PA 17121.

Telephone: (877) 493-3282.

Internet: <http://www.paworkstats.state.pa.us>

**Puerto Rico**

Economist, Labor Market Information Office, P.O. Box 195540, San Juan, Puerto Rico 00919-5540.

Telephone: (787) 754-5347.

Internet: <http://www.net-emplopr.org/alimis23/index.jsp>

**Rhode Island**

Assistant Director, Labor Market Information, Rhode Island Department of Labor and Training, 1511 Pontiac Ave., Cranston, RI 02920.

Telephone: (401) 462-8767.

Internet: <http://www.dlt.ri.gov/lmi>

**South Carolina**

Director, Labor Market Information Department, South Carolina Employment Security Commission, 631 Hampton St., Columbia, SC 29202.

Telephone: (803) 737-2660.

Internet: <http://www.sces.org/lmi/index.asp>

**South Dakota**

Director, Labor Market Information Center, Department of Labor, 420 S. Roosevelt St., Aberdeen, SD 57402-4730.

Telephone: (605) 626-2314.

Internet: <http://www.state.sd.us/dol/lmic/index.htm>

**Tennessee**

Director, Research and Statistics Division, Department of Labor and Workforce Development, 500 James Robertson Pkwy., 11th Floor, Nashville, TN 37245-1000.

Telephone: (615) 741-2284.

Internet: <http://www.state.tn.us/labor-wfd/lmi.htm>

**Texas**

Labor Market Information, Texas Workforce Commission, 9001 North IH-35, Suite 103A, Austin, TX 75753.

Telephone: (512) 491-4800.

Internet: <http://www.tracer2.com>

**Utah**

Director of Workforce Information, Utah Department of Workforce Services, 140 East 300 South, Salt Lake City, UT 84111.

Telephone: (801) 526-9401.

Internet: <http://jobs.utah.gov/opencms/wi>

**Vermont**

Chief, Research and Analysis, Vermont Department of Labor, P.O. Box 488, Montpelier, VT 05601-0488.

Telephone: (802) 828-4202.

Internet: <http://www.labor.vermont.gov>

**Virgin Islands**

Chief, Bureau of Labor Statistics, Department of Labor, P.O. Box 303359, St Thomas, VI 00803-3359.

Telephone: (340) 776-3700.

Internet: <http://www.vidol.gov>

**Virginia**

Director, Economic Information Services, Virginia Employment Commission, 703 East Main St., Room 327, Richmond, VA 23218.

Telephone: (804) 786-5496.

Internet: <http://velma.virtuallmi.com>

**Washington**

Director, Labor Market and Economic Analysis, Washington Employment Security Department, PO Box 9046, Olympia, WA 98507-9046.

Telephone: (360) 438-4804.

Internet: <http://www.workforceexplorer.com>

**West Virginia**

WORKFORCE West Virginia, Research, Information and Analysis Division, 112 California Ave., Charleston, WV 25303-0112.

Telephone: (304) 558-2660.

Internet: <http://www.wvbep.org/bep/lmi>

**Wisconsin**

Director, Bureau of Workforce Information, Department of Workforce Development, 201 E. Washington Ave., Madison, WI 53702.

Telephone: (608) 266-8212.

Internet: <http://worknet.wisconsin.gov/worknet>

**Wyoming**

Manager, Research and Planning, Wyoming Department of Employment, P.O. Box 2760, Casper, WY 82602-2760.

Telephone: (307) 473-3807.

Internet: <http://doe.state.wy.us/lmi>

