

# Chapter III. Selected Occupational Data, 2006 and Projected 2016

This chapter presents data on current and projected employment, annual average job openings, and other information for each National Employment Matrix occupation. Every other year, the Bureau of Labor Statistics updates the occupational employment projections. The 2006–16 projections—the most current—are shown in the job outlook section of the 2008–09 edition of the *Occupational Outlook Handbook*. Additionally, the *Monthly Labor Review* (November 2007) has tables and a detailed discussion of these projections while the *Occupational Outlook Quarterly* (fall edition, 2007) includes the data in brief textual and graphic presentations. The information in this chapter also is available on the Internet via two searchable databases: the National Employment Matrix <http://data.bls.gov/oep/nioem/empiohm.jsp> and the Occupational Employment, Training, and Earnings site <http://data.bls.gov/oep/noeted/empoptd.jsp>.

Table III–1 displays data on 2006 and projected 2016 employment, employment change, self-employment, annual average job openings, and other characteristics for each National Employment Matrix occupation. As a result, readers using table III–1 can obtain specific data about several variables for any occupation in the Matrix and compare the result against data for another detailed occupation or a group of occupations.

Table III–2 displays 2006 employment for the detailed occupations that are excluded from table III–1. These approximately 50 occupations are excluded because of reliability concerns or because the research required to prepare a projection from them could not be completed. Since current employment provides a measure of an excluded occupation’s significance in the labor market, table III–2 can be used as a supplement to table III–1. Except for “entertainment attendants and related workers, all other,” each of the excluded occupations falls under a line item occupation included in table III–1. For example, the line item “physicians and surgeons” includes employment data from eight excluded physician specialties, such as pediatricians.

## Data presented

Information about each variable’s data source and potential use is presented in this section.

The Occupational Employment Statistics (OES) survey and the Current Population Survey (CPS) provide almost all of the employment data used in developing the 2006–16 projections.<sup>1</sup> (See chapter II for more details on the structure of the 2006–16 Na-

<sup>1</sup> Since November 2002, the OES survey has been a semiannual mail survey of approximately 200,000 establishments collected in May and November of each year. Over the course of a 3-year cycle, approximately 1.2 million establishments are sampled. For the May 2006 OES survey estimates, data collected in May 2006 were combined with data collected in November 2005, May 2005, November 2004, May 2004, and November 2003. Detailed information about the May 2006 OES survey is available at the OES web site (<http://www.bls.gov/oes/home.htm>). The CPS is a monthly household survey on labor force characteristics. Each month, personal and telephone interviews are conducted at about 60,000 households. Detailed information is available at the CPS Web site (<http://www.bls.gov/cps/home.htm>).

tional Employment Matrices.) These surveys also are the sources of most other statistical information contained in table III–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>2</sup>.

Data from CPS proxy occupations are substituted for CPS occupations with a small number of workers or were otherwise considered unreliable. 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. (See chapter V for more discussion.)

The following sections describe the variables presented in table III–1.

**Employment, 2006 and 2016.** (Source: Bureau of Labor Statistics, National Employment Matrices for 2006 and 2016.) 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 needs. Employment for wage and salary jobs, the self-employed, and unpaid family workers are included.

**Employment change, 2006–16, numeric.** (Source: Bureau of Labor Statistics, National Employment Matrices for 2006 and 2016.) The numerical change in employment measures the projected number of job gains or losses.

**Employment change, 2006–16, percent.** (Source: Bureau of Labor Statistics, National Employment Matrices for 2006 and 2016.) 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. Even modest employment growth in a large occupation can result in many more job openings due to growth than rapid employment growth in a small occupation.

**Job openings due to growth and total replacement needs, 2006–16.** (Source: Bureau of Labor Statistics, see chapter V.) 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 employment of detailed occupations from the National

<sup>2</sup> For example, the OES program provides employment estimates for more than 800 detailed occupations in the 2000 Standard Occupational Classification (SOC) system. However, the CPS program provides employment estimates based on the 2000 Census of Population occupation system, which combines 2000 SOC occupations into 502 detailed occupations. Of the 502 CPS occupations, 373 were exact matches to OES occupations. The remaining CPS occupations were distributed over two or more SOC occupations. 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 SOC system used by the OES survey.

Employment Matrices for 2006–16. 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 2005–06 CPS data, and are described in chapter V. Data from CPS proxy occupations are used to estimate replacement needs for some matrix occupations, as indicated.

**Job openings due to growth and net replacement needs, 2006–16.** (Source: Bureau of Labor Statistics, see chapter V.) 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 employment of detailed occupations in the 2006–16 National Employment Matrices. If employment declines, job openings due to growth are zero. Job openings due to net replacement needs typically arise because experienced workers permanently leave the occupation or the labor force. Net replacement needs are calculated from monthly CPS data between 1997 and 2006, and are described in chapter V. Data from CPS proxy occupations are used to estimate replacement needs for some matrix occupations.

**Median annual wages, 2006.** (Source: May 2006 OES survey.) Table III–1 presents median annual wages for employees in each occupation.

**Percent self-employed, 2006.** (Source: Bureau of Labor Statistics, National Employment Matrix for 2006.) 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 shows how many jobs in a matrix occupation come from CPS data on unincorporated self-employed persons in their primary or secondary job. The unincorporated self-employed work for earnings or fees in their own businesses, while the incorporated self-employed receive a wage or salary from their business.

**Unemployment rate.** (Source: Average of 2004–06 CPS monthly data.) 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 2004–06 CPS monthly data.) Persons who prefer part-time work may want to know the proportion of workers in an occupation who usually work fewer than 35 hours per week, that is, part time. The data on usual weekly hours were chosen for a respondent’s primary job, although they may hold more than one job. 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, see chapter I.) BLS uses

11 categories to describe all types of postsecondary education or training (see figure at the end of this chapter for detailed category descriptions.) Occupational analysts assign a single category that best describes the education or training needed by most workers to become fully qualified in a given occupation.

These categories can be used as an initial reference for assessing what postsecondary education or training may be preferable. However, these categories should not be viewed as an absolute standard because multiple paths of entry are available for many occupations. Reviewing the material on “Training, other qualifications, and advancement” in the *Occupational Outlook Handbook* and the educational attainment cluster data in table III–1 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*.

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 education and training required for a person to be hired.

**Educational attainment cluster.** (Source: Bureau of Labor Statistics, see chapter I.) Six clusters are defined on the basis of the distribution of the highest level of educational attainment of workers age 25–44 across nearly 500 occupations. 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 distribution of educational attainment for workers aged 25–44.** (Source: 2005–06 American Community Survey (ACS) annual average data, see chapter I.) These data show the percentage of employees in each occupation who are 25–44 years old 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.

Note that the highest level of educational attainment for a worker is not necessarily the level of education needed for their job. Also, care must be taken in comparing educational attainment for workers age 25–44 with workers of other age groups, because educational attainment may vary by group.

### Using occupational information in this chapter

Table III–1 consolidates 2006 and 2016 projected employment data and provides comparisons of occupational data. The table displays information about current and projected employment, projected job openings, wages, percent self-employed, the proportion of part-time workers, and common paths of entry.

The data in table III–1 have many uses. At times, users may want to know how a particular occupation—for example, “tellers”, matrix code 43-3071—compares with others. The first row in the table is for “Total, all occupations.” The data in this row can be used as a benchmark against the data in subsequent rows. For example, the percent growth for all occupations from 2006–16 is about 10 percent, while the percent growth for tellers is 13 percent. This shows that the teller occupation is growing slightly faster than all occupations. Also, the percent self-employed for all occupations in 2006 is 8 percent, while tellers did not show any self-employment at all. This indicates that self-employment is more common in other occupations besides tellers. Alternatively, a detailed occupation can be compared to a major occupation group. The percent self-employed for 43-0000 “Office and administrative support occupations” is 1.7 percent, which indicates that occupations in the same major group as tellers also have little or no self-employment.

When evaluating the education attainment data in table III–1 it is important for users to consider both the education and training category along with the educational attainment cluster. For example, the table shows that the registered nurses occupation generally requires an associate degree; however the majority of workers age 25-44 have a college (bachelor’s) or higher degree. While seemingly contradictory, this information taken in context implies that while the most significant source of education is an associate degree, younger workers entering the occupation increasingly have bachelor’s or higher degrees. Thus, it could be concluded that an associate degree will help a jobseeker prepare for this occupation, but a bachelor’s degree will help them be more competitive for the best jobs.

Jobseekers may use their own judgment to determine what characteristics are most appealing. For example, an occupation with an above-average proportion of part-time workers may be desirable to some jobseekers with considerable school or family responsibilities. However, recent college graduates may prefer a career with more opportunities for full-time work.

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 III–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 to this publication identifies State and local sources of information.

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

## Classification of occupations by most significant source of education or training

Occupations are classified into 1 of the 11 categories according to the following 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 lawyer, physician and surgeon, and dentist.

**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: for example, postsecondary teachers or medical scientists, except epidemiologists.

**Master's degree.** Completion of this degree usually requires 1 or 2 years of full-time academic study beyond a bachelor's degree: for example, clergy or educational, vocational, and school counselors.

**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: for example, accountants and auditors or elementary school teachers, except special education.

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

example, paralegals and legal assistants or medical record and health information technicians.

**Postsecondary vocational awards.** These 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. Examples include nursing aides, orderlies, and attendants or hairdressers, hairstylists, and cosmetologists.

### 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. For example, heavy and tractor-trailer truck drivers or secretaries, except legal, medical, and executive.

**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. For example, retail salespersons or waiters and waitresses.