

Occupational employment



The growth of any occupation is closely tied to the outlook for the industries in which it is found. For example, employment in computer occupations, such as computer systems analyst, is expected to grow along with the demand for increases in computer and data processing services.

Employment growth also depends on changes in an occupation's share of each industry's workforce. With increases in the use of technology in almost every area of business, occupations such as computer engineer and computer systems analyst are expected to account for increasing portions of employment in nearly every industry. Moreover, the need for typists, bookkeepers, and switchboard operators will decline in most industries as automation displaces these workers.

The Bureau researches and analyzes these and other factors affecting employment growth for 698 detailed occupations. In order to better explain broad occupational employment trends, these occupations are categorized in two different ways: by the type of work they perform and by the type of education or training most commonly required. Most of the following data are presented in terms of the latter, as this is more helpful in providing career guidance.

Classification by type of work performed

Occupations have been sorted into 10 major categories. The categories are based on those of the 2000 Standard Occupational Classification (SOC), which groups occupations by the type of work performed.

The occupational groups are:

- ◆ **Management, business, and financial operations occupations.** These workers direct the activities of business, government, and other organizations. Examples are financial managers, computer and information systems managers, school administrators, chief executives, accountants, and food service managers.
- ◆ **Professional and related occupations.** Workers in this group provide a variety of services throughout the economy in many industries. Examples of workers in professional occupations are actuaries, radiologic technologists, teachers, photographers, lawyers, drafters, and computer software engineers.
- ◆ **Service occupations.** This group includes workers who attend to the public, such as police, firefighters, cooks, nursing aides, embalmers, flight attendants, childcare workers, and barbers.
- ◆ **Sales and related occupations.** Occupations in this group are involved in the transfer of goods and services in the

economy, both to businesses and to individual consumers. These workers include cashiers, insurance sales agents, retail salespersons, telemarketers, and travel agents.

- ◆ **Office and administrative support occupations.** Workers in this group prepare and file documents, deal with the public, and gather and distribute goods and information. Examples are secretaries, stock clerks, mail carriers, telephone operators, computer operators, and receptionists.
- ◆ **Farming, fishing, and forestry occupations.** This occupational group includes workers involved in agriculture, commercial fishing, and logging and includes farmworkers, agricultural inspectors, fishing vessel captains, and logging equipment operators.
- ◆ **Construction and extraction occupations.** This group includes workers primarily involved in new building construction, both residential and commercial; mining and quarrying; and oil and gas extraction and processing. Examples are carpenters, electricians, construction trades helpers, derrick operators, roustabouts, and mining machine operators.
- ◆ **Installation, maintenance, and repair occupations.** In this group are workers involved in the installation of a variety of new equipment and the maintenance and repair of existing equipment. Examples are avionics technicians, automotive service technicians and mechanics, bicycle repairers, watch repairers, and millwrights.
- ◆ **Production occupations.** People in these occupations are involved in production work as assemblers and plant operators, primarily in manufacturing industries. Workers include computer-controlled machine tool operators, machinists, and chemical equipment operators.
- ◆ **Transportation and material moving occupations.** Occupations in this group are involved in the land, sea, or air transportation of people and materials. They load and unload passengers and goods and operate the means of travel. Workers include airline pilots, truckdrivers, busdrivers, taxidriviers and chauffeurs, locomotive engineers, sailors, hand packers and packagers, pumping station operators, and parking lot attendants.

Classification by education and training

The Bureau has developed a system for grouping occupations by the education and training most commonly required to work in an occupation. In this system, occupations fall within 1 of 11 categories. Seven of the eleven usually require education beyond the high school level, from vocational

training to doctoral and first-professional degrees. Occupations in the remaining four categories involve skills learned through varying degrees of on-the-job training and work experience in similar occupations or activities.

The education and training categories are:

- ◆ **First-professional degree.** Completion of a first-professional degree usually requires at least 3 years of full-time academic study beyond a bachelor's degree.
- ◆ **Doctoral degree.** Completion of a doctoral degree usually requires at least 3 years of full-time academic study beyond a bachelor's degree.
- ◆ **Master's degree.** Completion of a master's 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 managerial. All usually require experience in a related nonmanagement position for which a bachelor's or higher degree is usually required.
- ◆ **Bachelor's degree.** Completion of a bachelor's degree usually requires at least 4 years of full-time academic study beyond high school.
- ◆ **Associate degree.** Completion of an associate degree usually requires at least 2 years of full-time academic study beyond high school.
- ◆ **Postsecondary vocational award.** Postsecondary vocational programs vary in length, ranging from several weeks to a year or more. They lead to a certificate or other award, but not a degree.
- ◆ **Work experience in a related occupation.** Occupations in this category usually require skills and training acquired in a related occupation. They do not require a degree. Many are supervisory.
- ◆ **Long-term on-the-job training.** Occupations in this category usually require more than 12 months of on-the-job training or combined work experience and formal classroom instruction, such as apprenticeships and employer-sponsored training. Individuals undergoing training typically are considered employed in the occupation.
- ◆ **Moderate-term on-the-job training.** Workers in these occupations develop the skills they need during 1 to 12 months of combined on-the-job experience and informal training.
- ◆ **Short-term on-the-job training.** Workers in these occupations develop the skills they need after a short demonstration of job duties or during 1 month or less of on-the-job experience or instruction.

What are the best occupations?

Many criteria are used to determine the attractiveness of an occupation. In terms of opportunity, two of these criteria are measures of job outlook—employment growth in terms of numbers and in terms of percent—presented in this issue of the *Quarterly*. The charts focus on occupations projected to have the largest number of new jobs or the fastest rate of growth.

Because most people also consider earnings levels an important job characteristic, some charts include rankings for 2000 hourly earnings. The rankings are based on quartiles using one-fourth of total employment to define each quartile and are presented in four categories identified by dollar signs, with \$ indicating the range for the lowest quartile and \$\$\$\$ the range for the highest.

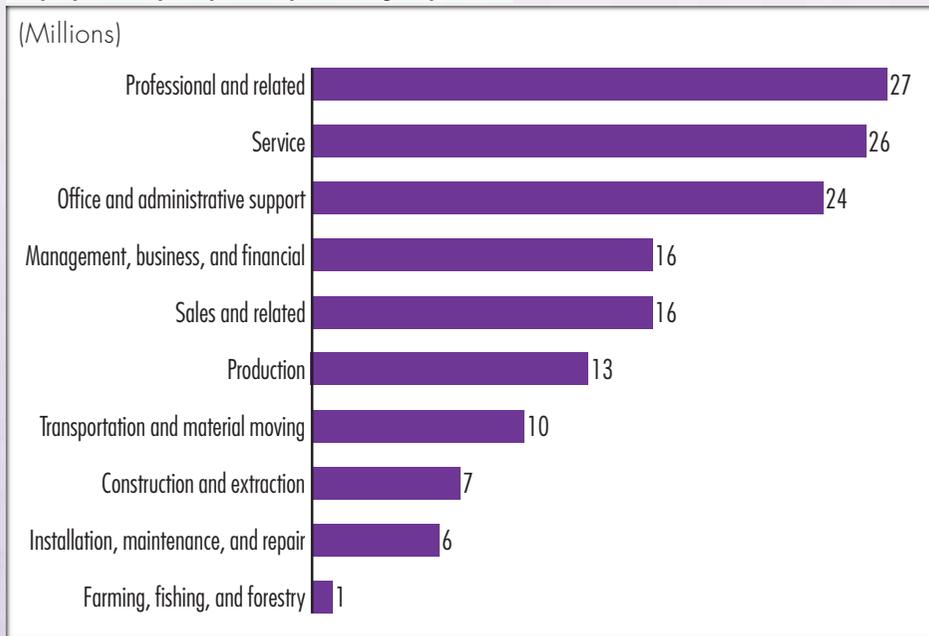
Opportunity to be one's own boss may also be a factor for a job's attractiveness. One chart provides information on

occupations that had the most self-employed workers in 2000. The importance of other factors, such as the opportunity to help people, to express creativity, or to be physically mobile on the job, varies from one person to another.

Other job openings

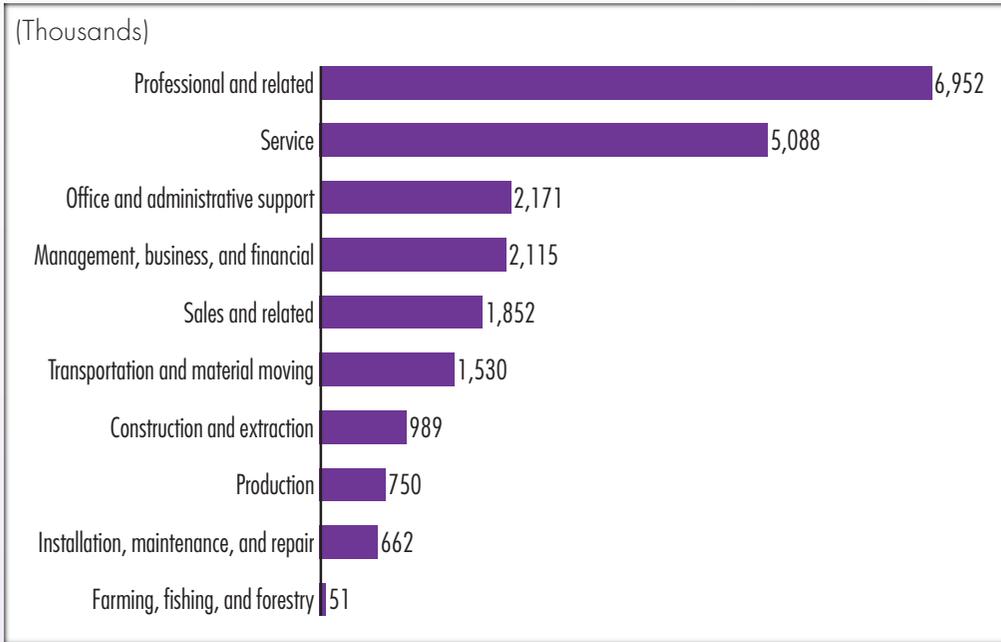
Not all job openings depend on the amount of growth in an occupation. Some job openings result from the need to replace workers who enter other occupations or retire or leave the labor force permanently for other reasons. In many instances, the number of job openings resulting from replacement needs is greater than that of openings resulting from employment growth. Even occupations projected to decline provide some job openings. A pair of charts in the following section show projected job openings.

Employment by major occupational group, 2000



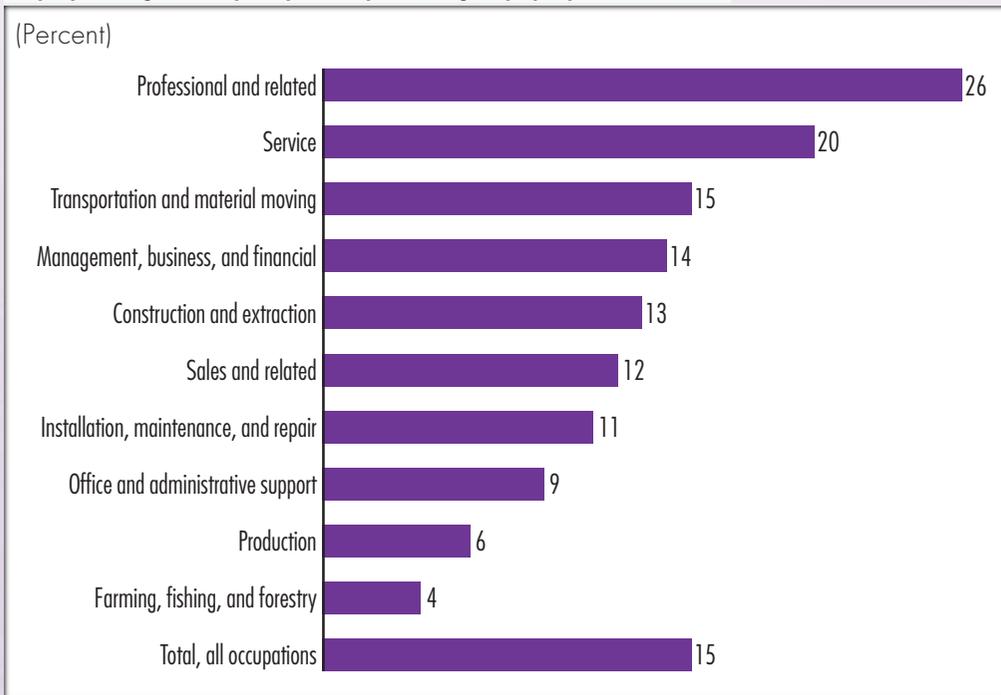
The largest number of jobs in 2000 was in the professional and related occupations group, although there was a nearly equal number in service occupations. Both groups are expected to have faster than average growth between 2000 and 2010.

Employment growth by major occupational group, projected 2000-10



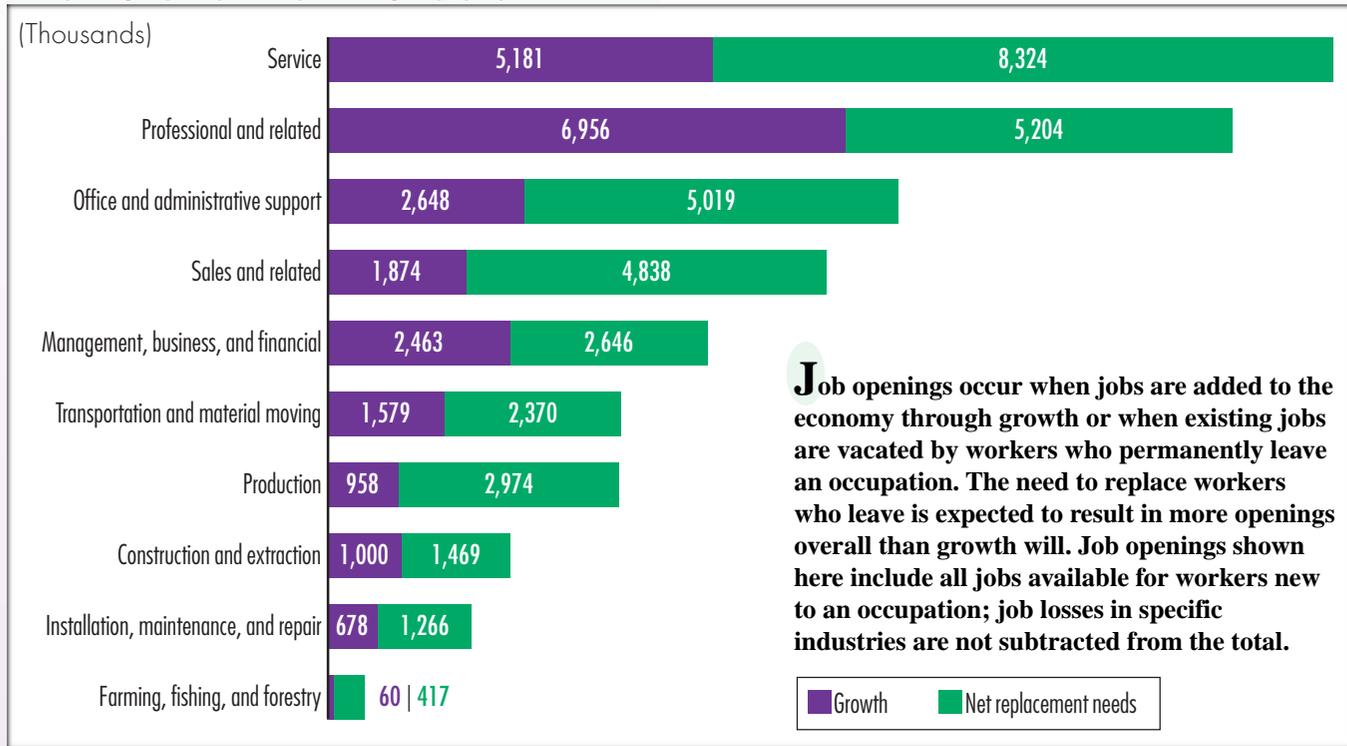
Professional and related occupations and service occupations are expected to account for the majority of 2000-10 job growth, making up more than half of all new jobs during that decade. In contrast, smaller occupational groups such as production; installation, maintenance, and repair; and farming, fishing, and forestry will have low numerical growth.

Employment growth by major occupational group, projected 2000-10

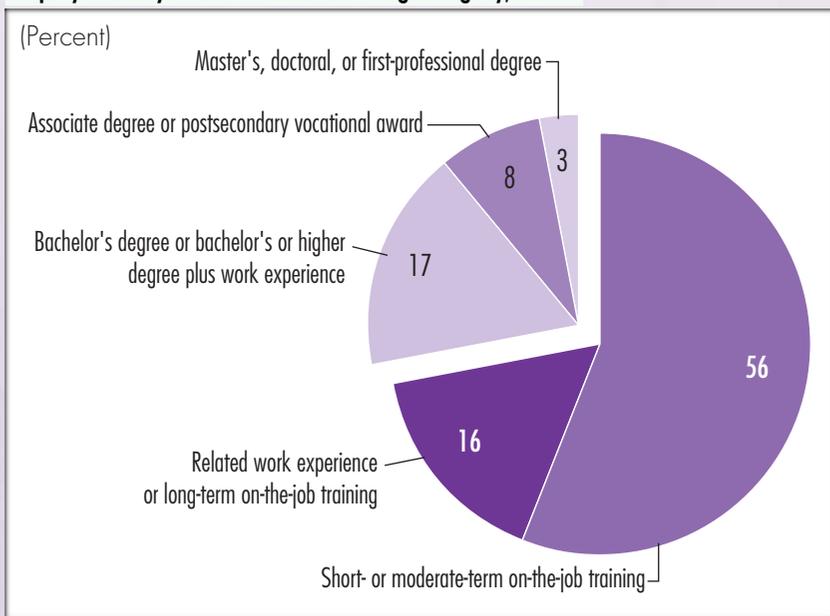


Transportation and material moving; management, business, and financial; and construction and extraction occupations are projected to have average growth rates, and both professional and related and service occupations will increase rapidly. As technology aids in increasing productivity, growth in some occupational groups—such as farming, fishing, and forestry and production—is expected to be slower than average.

Job openings by major occupational group, projected 2000-10



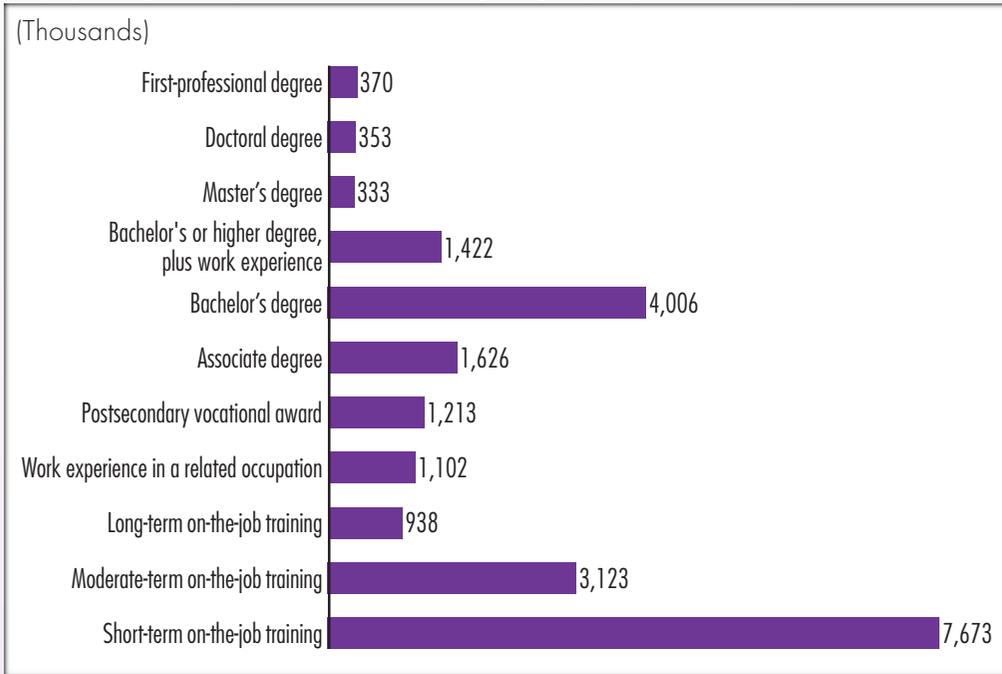
Employment by education and training category, 2000



In 2000, occupations usually requiring postsecondary education—from vocational training to first-professional degrees—made up about 28 percent of all jobs. Occupations usually requiring short- to moderate-term on-the-job training accounted for 56 percent, and occupations usually requiring long-term on-the-job training or related work experience accounted for the remaining 16 percent.

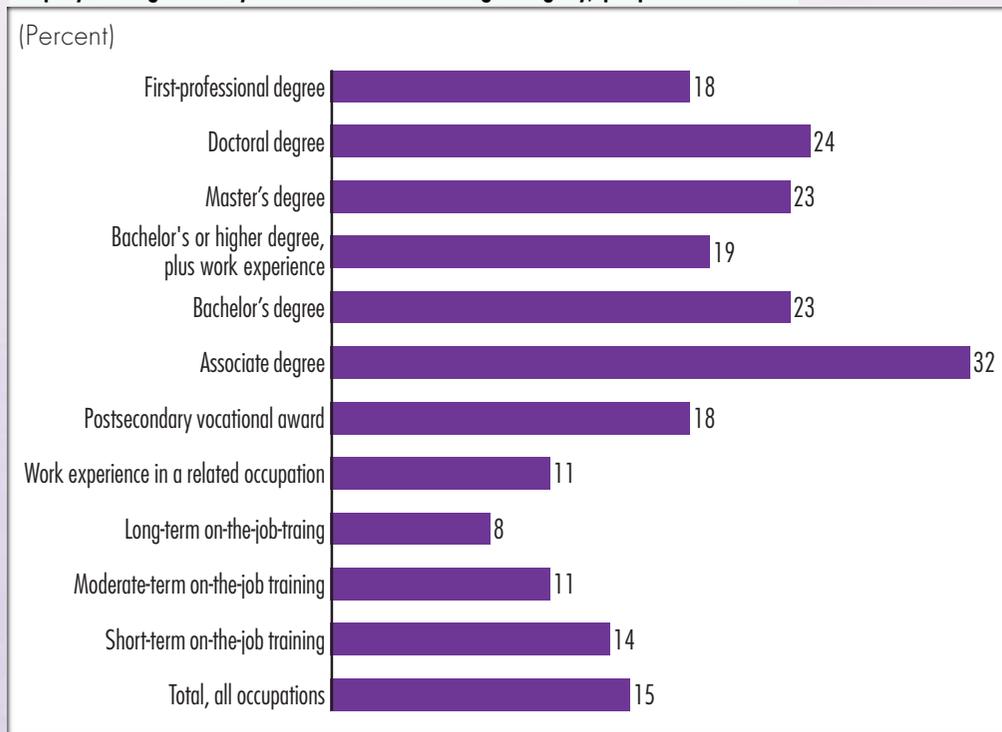
Employment growth by education and training

Employment growth by education and training category, projected 2000-10



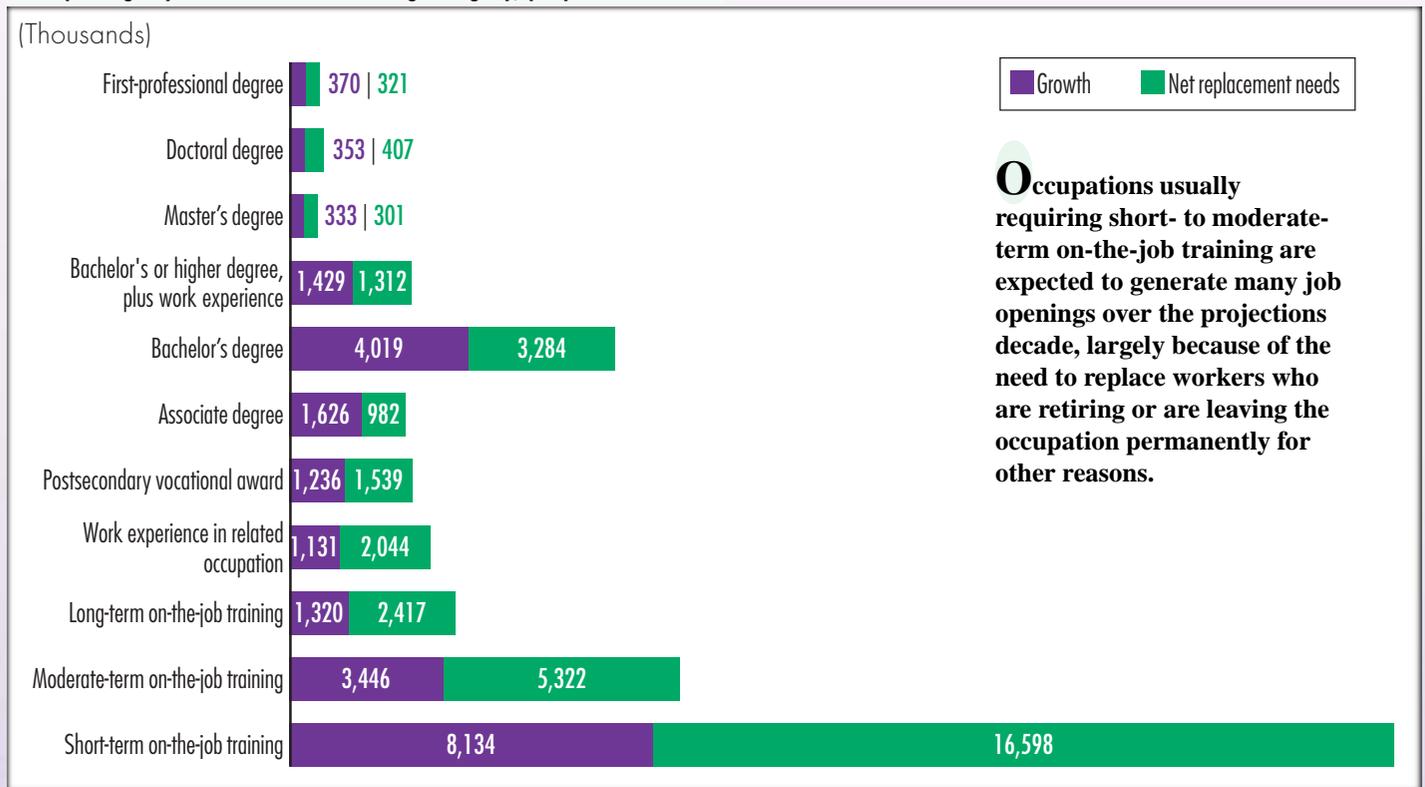
Occupations usually requiring short- or moderate-term on-the-job training are projected to account for about 10.8 million new jobs by 2010. Occupations usually requiring a bachelor's or higher degree are expected to contribute about 6.5 million new jobs. Those usually requiring related work experience or long-term on-the-job training will add about 2.0 million jobs.

Employment growth by education and training category, projected 2000-10

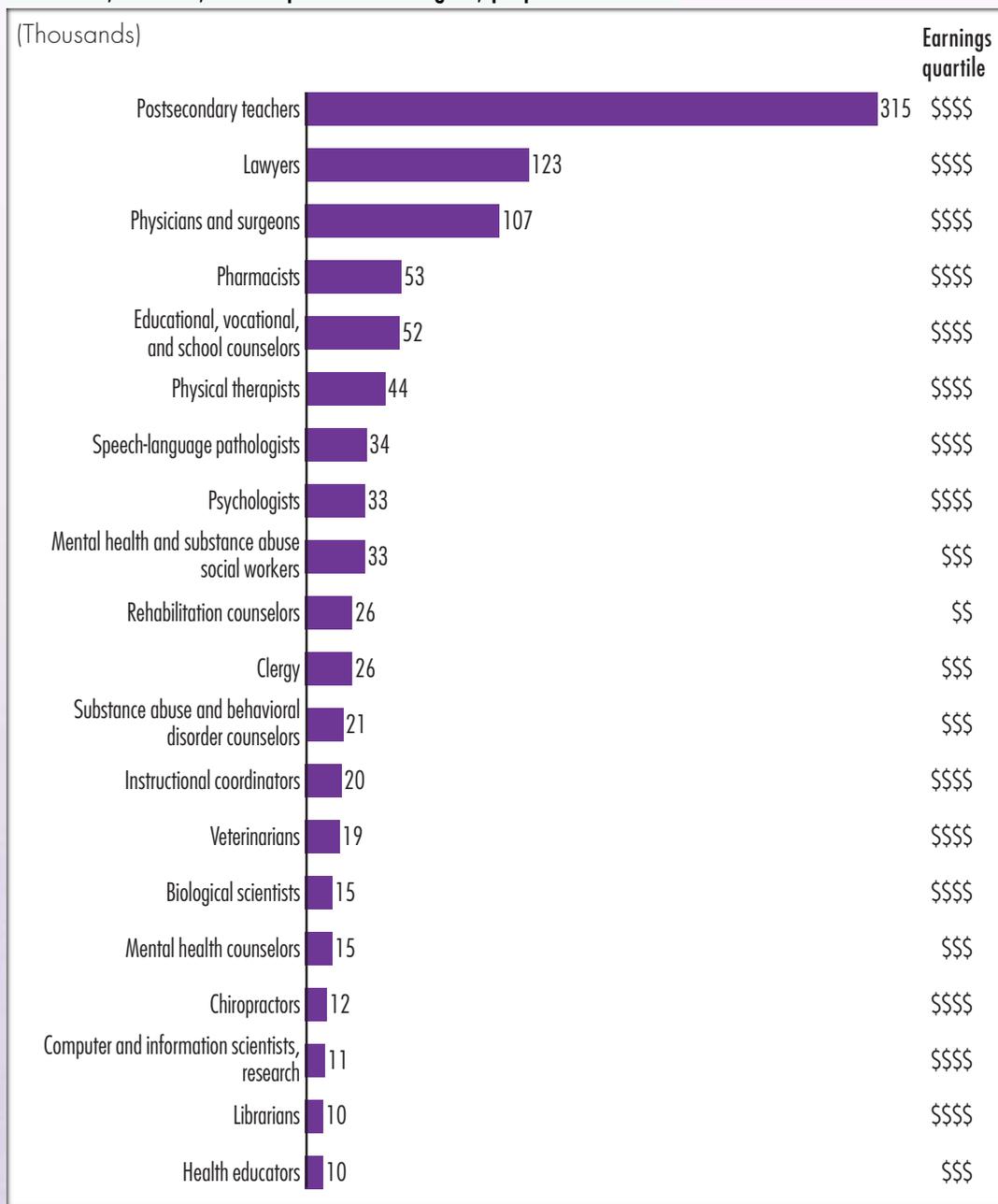


As a group, jobs usually requiring an associate degree are projected to have the fastest growth: 32 percent, about twice the average growth rate for all occupations. Occupations in the categories usually requiring a bachelor's degree or more education are expected to increase faster than the average. Those in the categories usually requiring on-the-job training will grow as fast as or slower than the average.

Job openings by education and training category, projected 2000-10

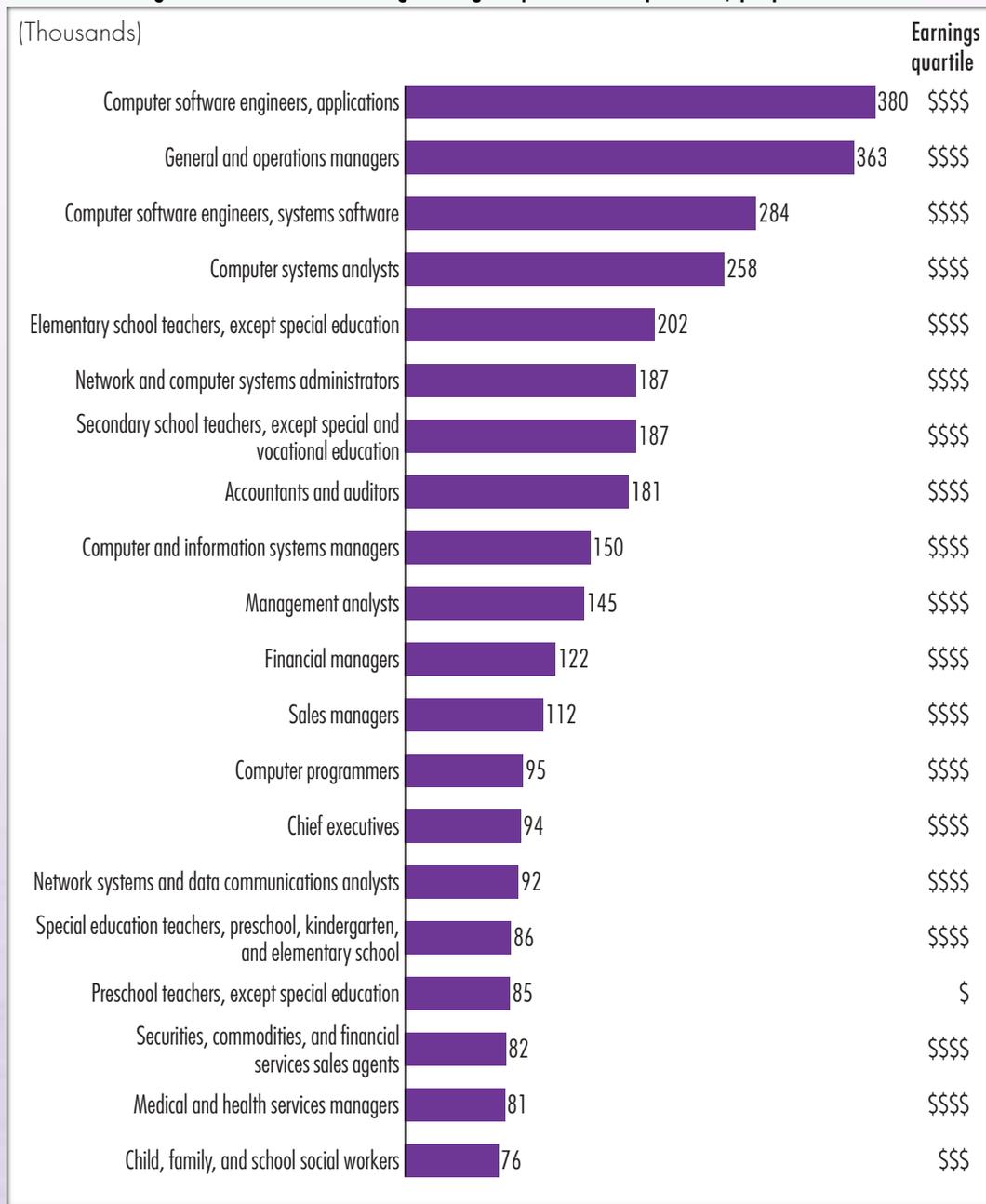


Employment growth in selected occupations usually requiring a master's, doctoral, or first-professional degree, projected 2000-10



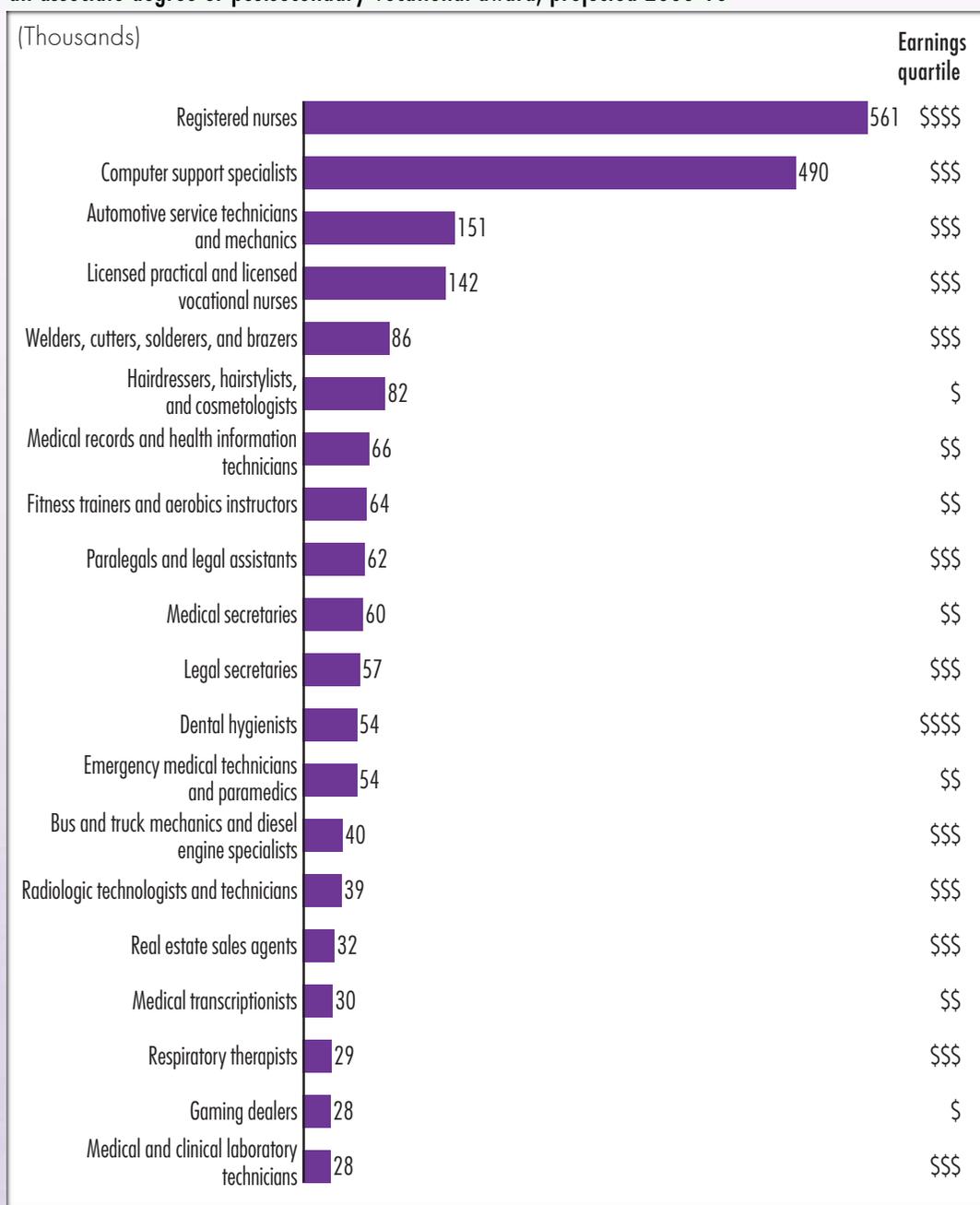
Most employment growth in this category is projected to be among postsecondary teachers, lawyers, and physicians and surgeons. The majority of occupations in this category have very high earnings.

Employment growth in selected occupations usually requiring a bachelor's degree or a bachelor's or higher degree plus work experience, projected 2000-10



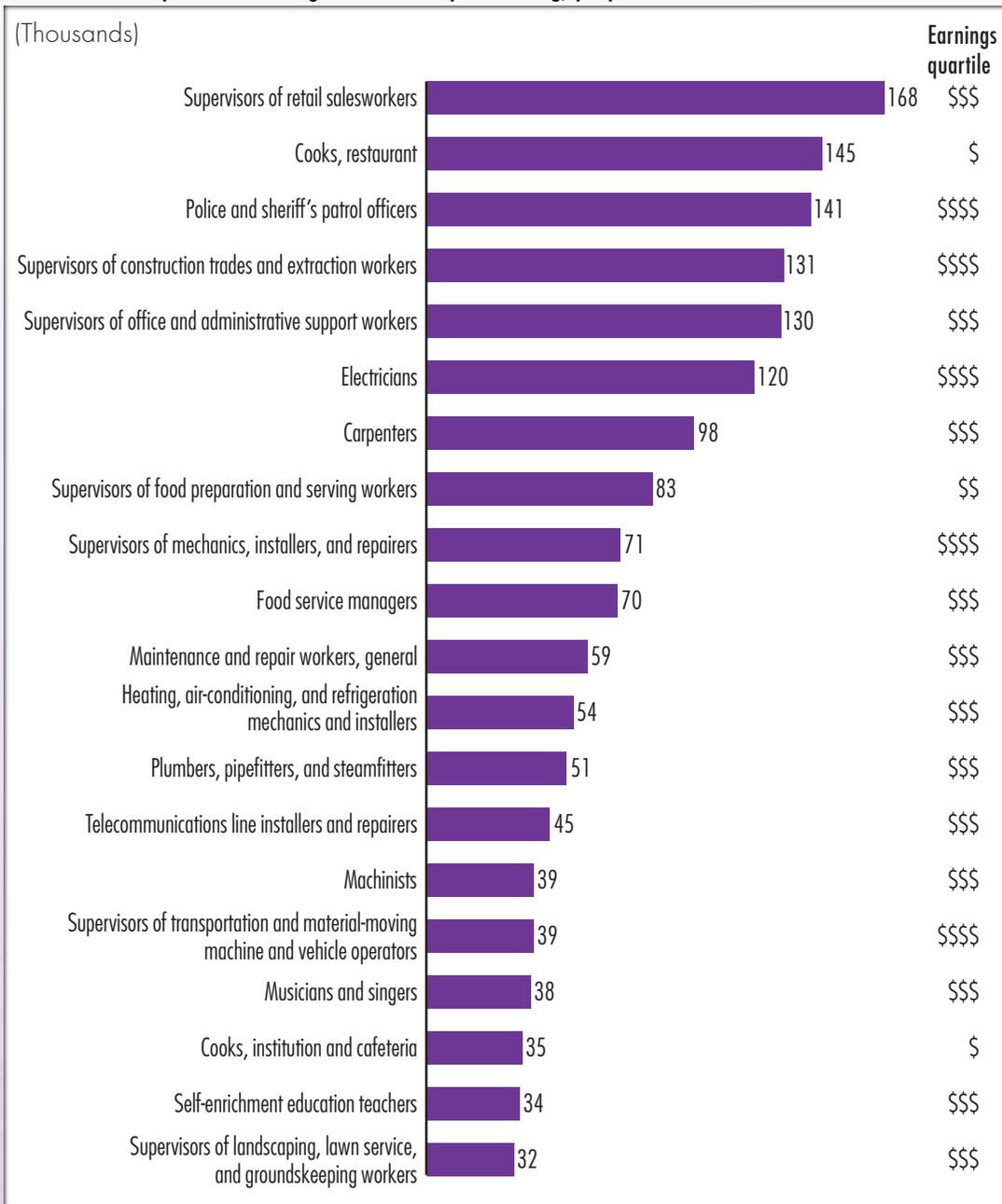
Many of the occupations with the highest projected growth in this category are computer related. Computer software engineer, computer systems analyst, network and computer systems administrator, and computer and information systems manager also are among the fastest growing and highest paying occupations.

Employment growth in selected occupations usually requiring an associate degree or postsecondary vocational award, projected 2000-10



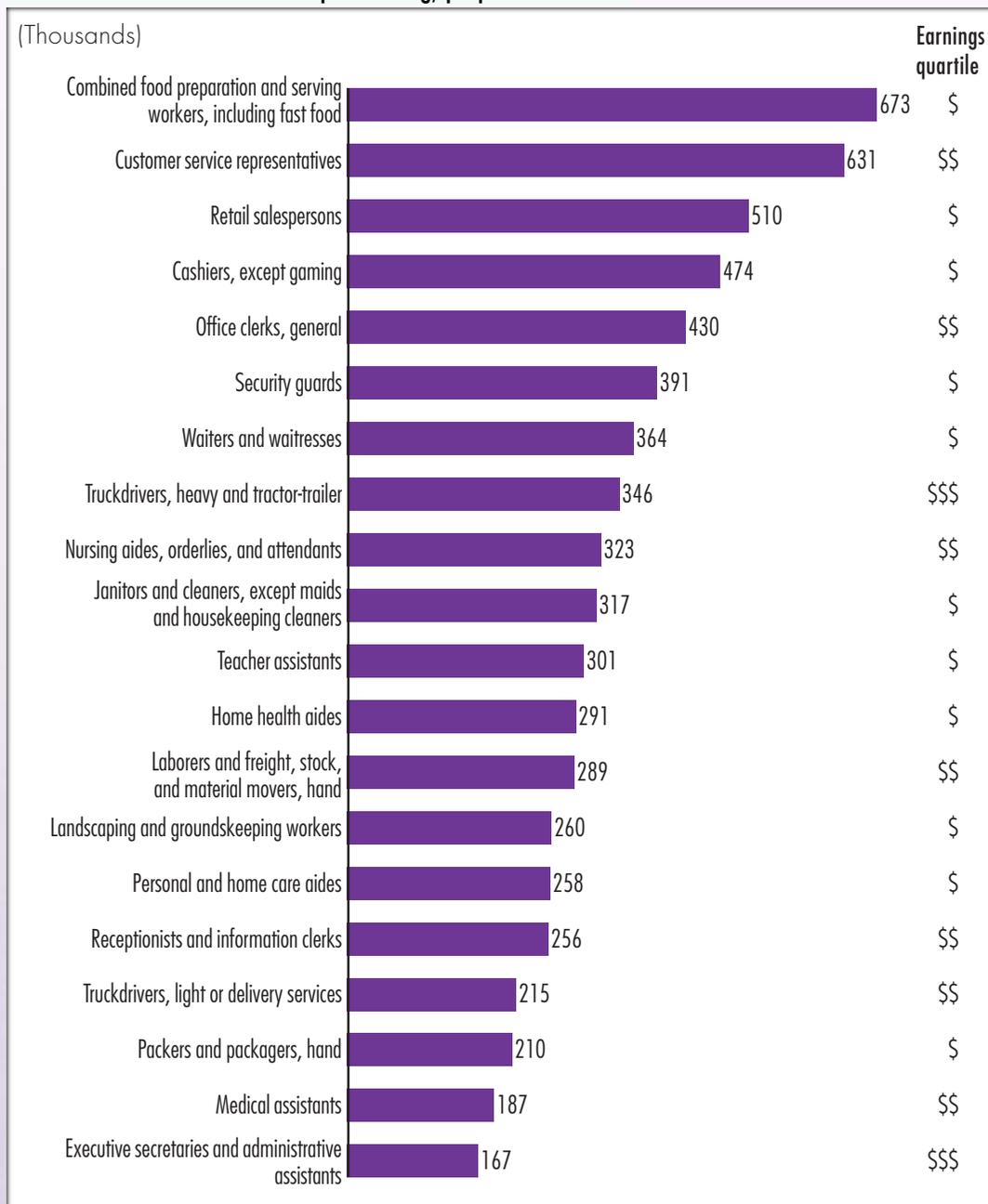
Registered nurse and computer support specialist dominate projected job growth in this category. Both occupations are expected to provide many new jobs because of projected rapid growth in the industries—primarily health services and computer and data processing services, respectively—that employ them.

Employment growth in selected occupations usually requiring related work experience or long-term on-the-job training, projected 2000-10



Supervisory occupations are projected to have a large increase in jobs over the projections decade. Along with police and sheriff's patrol officer, cook, carpenter, and electrician, they also are among the fastest growing occupations in this category and generally have high or very high earnings.

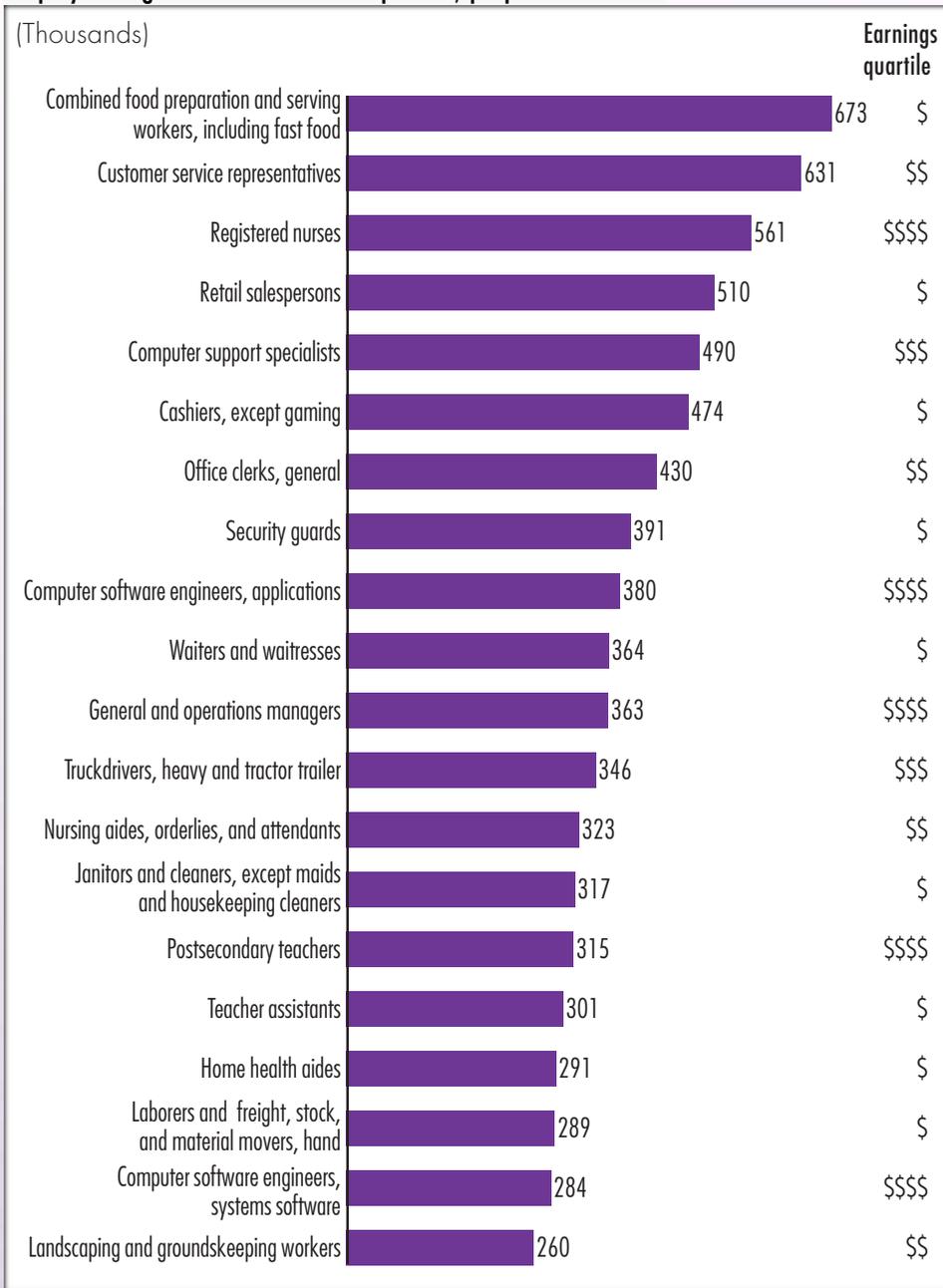
Employment growth in selected occupations usually requiring short- or moderate-term on-the-job training, projected 2000-10



Among occupations usually requiring short- to moderate-term on-the-job training, most new jobs are expected to be in service occupations, such as food preparation worker, cashier, and security guard.

Occupations gaining the most jobs

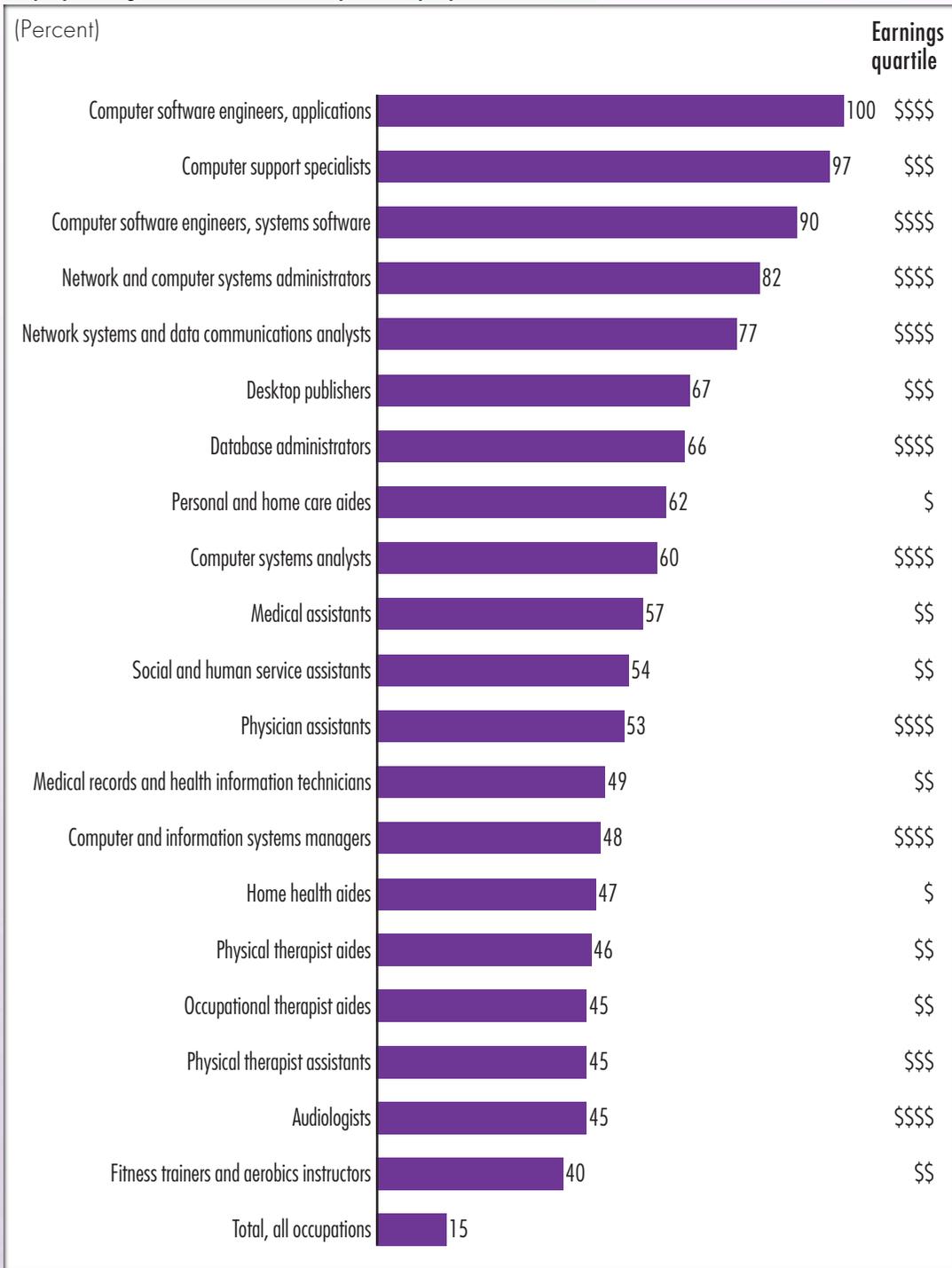
Employment growth in selected occupations, projected 2000-10



As the chart shows, the occupations that are expected to have many new jobs are diverse. There will be opportunities in occupations with a variety of job settings, training and education requirements, and earnings, from very low to very high.

Fastest growing occupations

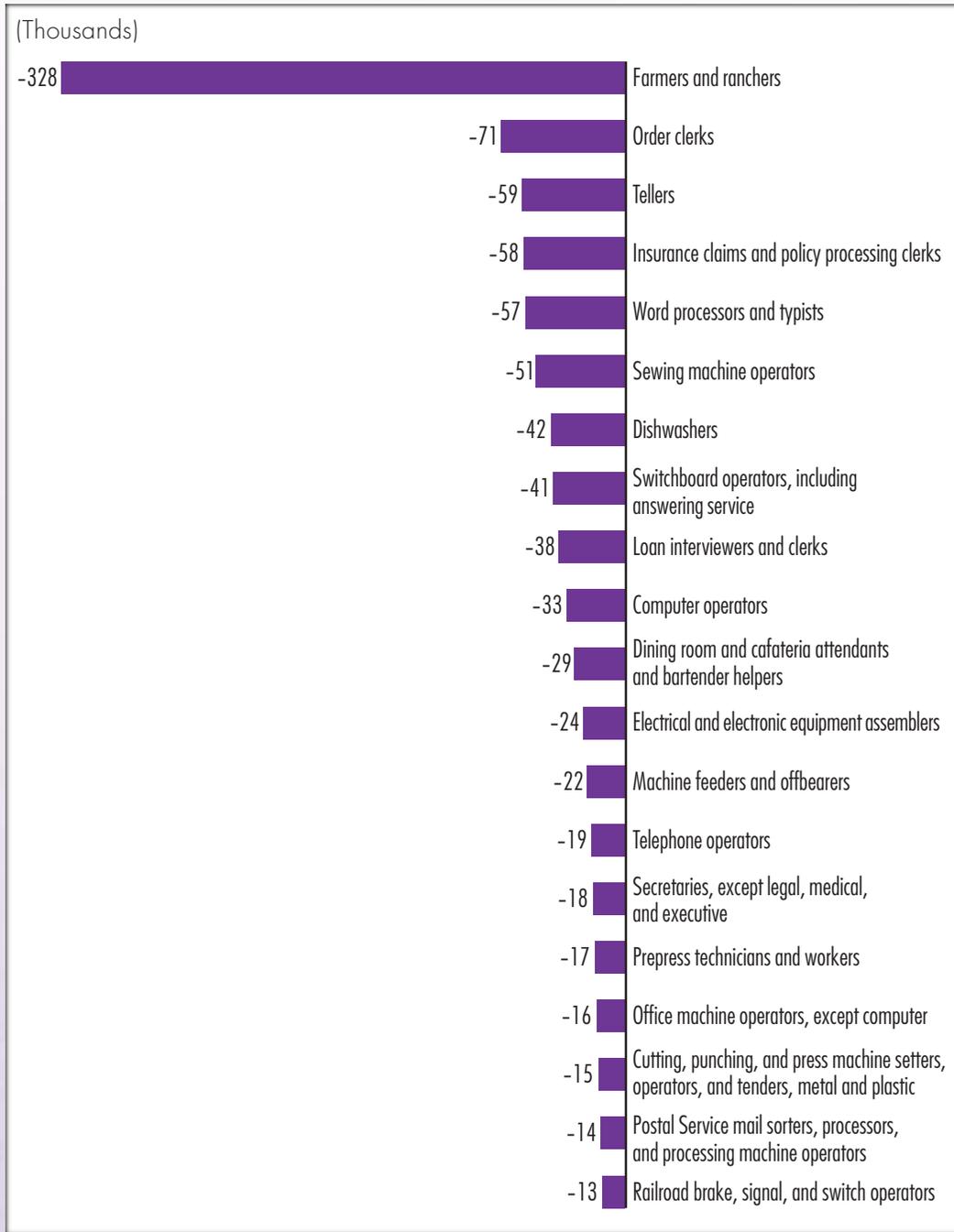
Employment growth in selected occupations, projected 2000-10



The seven fastest growing occupations are computer related: computer applications software engineer, computer support specialist, computer systems software engineer, network and computer systems administrator, network systems and data communications analyst, desktop publisher, and database administrator; all of them have high or very high earnings. Most of the other projected 20 fastest growing jobs are healthcare related.

Occupations losing the most jobs

Employment decline in selected occupations, projected 2000-10



Occupational employment declines usually are caused by increased imports of or decreased demand for specific goods and services, technology that increases productivity, or a transfer of duties to different occupations. The occupations expected to have the largest declines are in farming and in administrative support—both areas that are affected by technology.

Although declining employment often results in unfavorable prospects or limited opportunity, some openings may occur if the number of people leaving the occupation is greater than the decline in jobs.

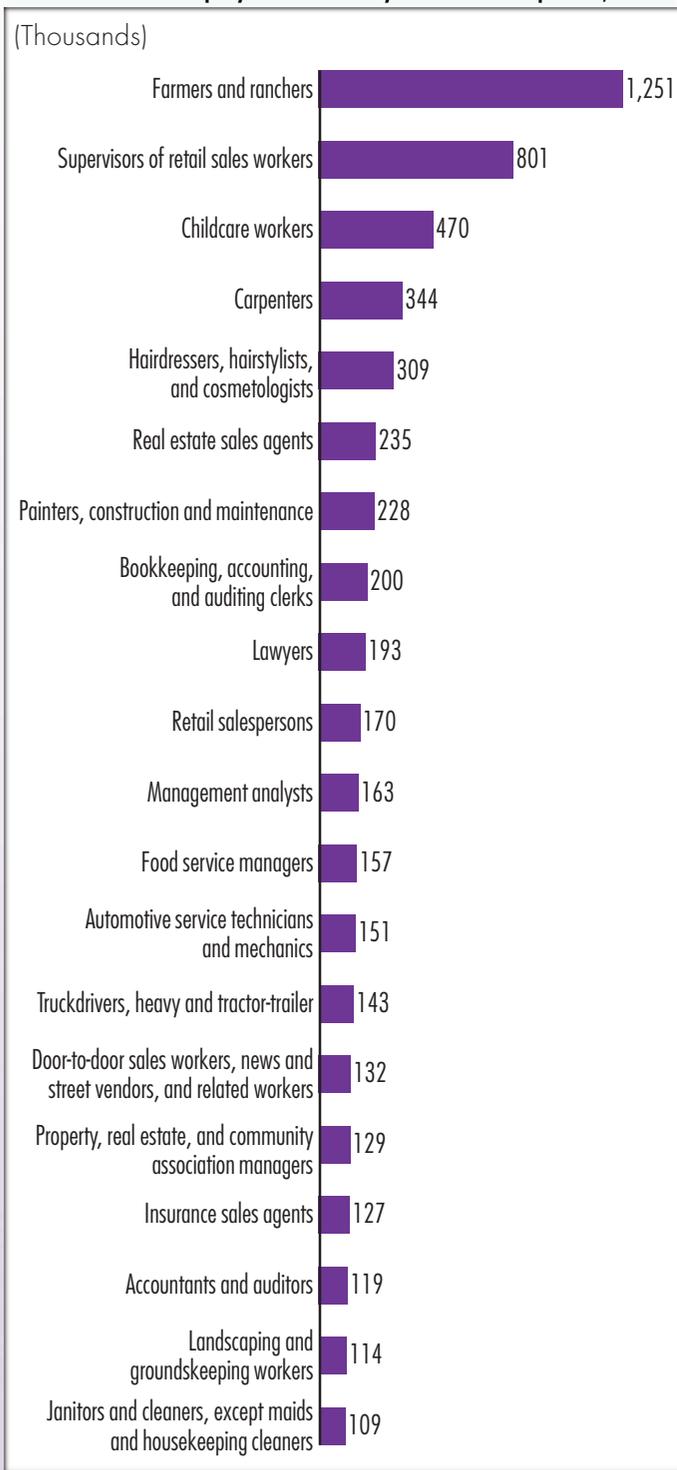
Occupations with the most self-employed

Employment by class of worker, 2000 and projected 2010



Most job growth will occur for wage-and-salary occupations, which are projected to employ about 22 million new workers. The number of self-employed and unpaid family workers is expected to change little, totaling about 12 million by 2010.

Number of self-employed workers by selected occupation, 2000



Farmers and ranchers, though projected to decline in employment, account for many of the self-employed workers in the United States. Other workers—such as retail salesworker managers, childcare workers, and carpenters—own and operate businesses.