

# 1 INTRODUCTION

**M**ore than 131 million people are employed in the United States. As we enter the new millennium, the U.S. workforce will be older and more diverse and will continue to shift from traditional heavy industry to services. Alternative work arrangements such as job sharing, part-time scheduling, and temporary or contingent work will become more common in response to rapid technological and economic changes. These changes will present new challenges to assuring the safety and health of Americans in the workplace.

Preventing occupational injuries and illnesses depends on our ability to quantify and track them. Through occupational safety and health surveillance, we can provide ongoing and systematic collection, analysis, interpretation, and dissemination of data for the purposes of prevention. Surveillance increases the effectiveness of prevention activities by targeting them to industries, workplaces, and occupations that have the greatest needs. Surveillance also expands knowledge about which prevention programs are effective.

Current occupational safety and health surveillance efforts indicate that 6.1 million injuries and illnesses were recorded in 1997 in private-sector establishments in the United States. During the same year, 6,238 workers died of occupational injuries. Since 1968, more than 113,000 worker deaths have been attributed to pneumoconioses (dust diseases of the lung). This number represents only a small portion of the total deaths attributable to occupational lung disease. Workplace injuries and illnesses also take a toll on workers' ability to earn a living and on economic productivity overall. From 1973 to 1997, the number of lost-workday cases\* rose from 1.9 million to 2.9 million per year. During this period, there was a decrease in the number and rate of cases with actual days away from work and an increase in the number and rate of cases with restricted work activity only. Taken together, the surveillance data indicate that the human and economic losses associated with occupational injuries and illnesses are staggering. Much work remains to reduce those losses, but some improvements have been observed in recent years.

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\*Lost-workday cases include cases with days away from work and cases with restricted work activity only (i.e., cases in which workers report to their jobs for limited duty).

Our ability to survey and assess the state of occupational safety and health has improved over time. Publications such as the *Work-Related Lung Disease Surveillance Report, 1999* (WoRLD) [NIOSH 1999], fatality summaries from the National Traumatic Occupational Fatalities Surveillance System (NTOF) [NTOF 1999], and the annual series of occupational safety and health data publications from the Bureau of Labor Statistics (BLS) provide periodic updates on occupational injuries and illnesses. Despite these efforts, occupational safety and health surveillance data are fragmented and have substantial gaps, making it difficult to characterize the overall health of working America. To make existing data more accessible, the National Institute for Occupational Safety and Health (NIOSH) has assembled this chartbook to provide a variety of occupational safety and health surveillance information in a single volume. The book includes contributions from several Federal agencies that collect data relevant to occupational safety and health. These agencies include BLS; the National Center for Health Statistics (NCHS); the National Center for Infectious Diseases (NCID); the National Center for HIV, STD, and TB Prevention (NCHSTP); the National Cancer Institute (NCI); the U.S. Environmental Protection Agency (EPA); the Mine Safety and Health Administration (MSHA); and the Consumer Product Safety Commission (CPSC). We hope this chartbook will be useful to anyone interested in workplace safety and health, including researchers, legislators and policy makers, health care professionals, educators, and occupational safety and health practitioners in labor, management, and consulting environments. NIOSH and the contributing agencies invite everyone to use the information provided here to see where we have been, where we are, and where we might go toward our common goal of protecting the safety and health of American workers.

## Chartbook Organization and Data Systems

This is the first edition of the *Worker Health Chartbook*, which will be an ongoing effort to assemble and integrate occupational safety and health surveillance information. The document is organized into sections on occupational fatal injuries, fatal illnesses, nonfatal injuries, and nonfatal illnesses. The *Focus on Mining* section describes safety and health in the mining industry. Topics in this section will change in future editions to summarize available data about other high-risk industries (e.g., agriculture and construction) or special populations (e.g., women and working adolescents).

The information presented here was obtained from several data systems maintained by a variety of Federal agencies. Each system has strengths and limitations. The systems may use different definitions, recording approaches, and sample populations, so they may produce different results for the same topic. For example, some of the reported values represent estimates based on statistical samples of populations, whereas others represent actual counts of cases. Some systems concentrate on workers only, and others report on all U.S. residents aged 15 and older. In addition, most data are restricted to private-sector workers. Public-sector workers (i.e., Federal, State, and municipal workers) may be included in some data systems such as fatality surveys and case-based surveillance systems, but the coding may not permit exact numbers to be determined. Consequently, public workers, a large segment of the U.S. workforce, are not described adequately. Appendix A and the Glossary describe the surveillance systems and terms used throughout this book.

Data on fatal injuries were obtained from NTOF and from the Census of Fatal Occupational Injuries (CFOI). These systems record rates and numbers of fatal injuries by industry and occupation, changes over time, and rates for high-risk industries and occupations. Information about fatal occupational illness was taken from the National Occupational Mortality Surveillance System (NOMS), the National Surveillance System for Pneumoconiosis Mortality (NSSPM), and the Vital Statistics, Mortality, and Multiple-Cause-of-Death data files from the National Center for Health Statistics (NCHS). NOMS presents an overview of the risk of death from several chronic diseases, whereas NSSPM is restricted to the pneumoconioses. The NCHS multiple-cause-of-death data provide information about mortality due to malignant neoplasms of the pleura and hypersensitivity pneumonitis. Data on nonfatal occupational injuries were obtained from the BLS annual Survey of Occupational Injuries and Illnesses (SOII), the National Electronic Injury Surveillance System (NEISS), and the National Hospital Ambulatory Medical Care Survey (NHAMCS). Data on nonfatal occupational illnesses were taken from SOII, the Sentinel Event Notification System for Occupational Risk (SENSOR), the California Department of Pesticide Regulation (CDPR), the Adult Blood Lead Epidemiology Surveillance System (ABLES), the Coal Workers' X-Ray Surveillance Program (CWXSP), the third National Health and Nutrition Examination Survey (NHANES III), the National Surveillance System for Hospital Health Care Workers (NaSH), the Toxic Exposure Surveillance System (TESS), the Viral Hepatitis Surveillance Program (VHSP), the Sentinel Counties Study of Acute Viral Hepatitis, Surveillance for

Tuberculosis Infection in Health Care Workers (*staffTRAK-TB*), and the Centers for Disease Control and Prevention (CDC) national HIV/AIDS Reporting System (HARS).

## Demographics

In 1998, approximately 131 million people were employed in the United States; 54% were male. By race/ethnicity, 84% of these workers were white, 11% were black, and 10% were Hispanic (of any race). These distributions vary by industry division (Table 1-1) and occupation (Table 1-2). In the 15-year period from 1983 to 1998, the largest increases in employment occurred in the services industry division (Figure 1-1) and in the executive, administrative, and managerial occupations and the professional specialty occupations (Figure 1-2). Future employment trends are projected from 1983 to 1998 changes. By 2008, 20 occupations (of 500 listed by the BLS) are projected to gain the largest number of jobs—about 8 million, or 39% of growth (Figure 1-3). Four occupations from this list also appear on the list of fastest growing occupations (Figure 1-4): computer engineers, computer support specialists, computer systems analysts, and personal care and home health aides.

The distribution of the labor force is projected to change by age, with workers aged 45 and older increasing from 33% to 40% of the workforce, and those aged 25 to 44 decreasing from 51% to 44% (Figure 1-5). From 1998 to 2008, the number of women in the labor force will increase by 15% compared with 10% for men and 12% overall. Women's total share of the workforce is projected to increase from 46% in 1998 to 48% in 2008. The share of labor force by race/ethnicity also is projected to shift, with decreases for whites, little or no change for blacks, and increases for Hispanics (of any race), Asians, and other races (Figure 1-6).

Table 1–1. Persons aged 16 and older employed in the United States in 1998, by major industry, sex, and race/ethnicity

Industry division	Number employed (thousands)	% male	% female	% white	% black	% Hispanic*
All industries	131,464	53.8	46.2	84.4	11.1	10.1
Agriculture	3,378	75.6	24.4	93.5	4.1	22.0
Mining	620	86.3	13.7	93.4	4.5	8.9
Construction	8,518	90.6	9.4	91.1	6.4	12.7
Manufacturing—durable goods	12,566	72.7	27.3	85.9	9.1	9.6
Manufacturing—nondurable goods	8,168	61.2	38.8	82.1	12.8	13.7
Transportation and public utilities	9,307	70.9	29.1	80.8	15.1	9.5
Wholesale and retail trade	27,203	52.8	47.2	85.2	9.6	11.4
Finance, insurance, and real estate	8,605	41.3	58.7	85.4	10.4	7.1
Services	47,212	37.9	62.1	83.0	12.2	8.7
Public administration	5,887	56.4	43.6	79.5	16.5	6.6

Source: BLS [1999].

\*Of any race.

Table 1–2. Persons aged 16 and older employed in the United States in 1998, by major occupation, sex, and race/ethnicity

Occupation	Number employed (thousands)	% male	% female	% white	% black	% Hispanic*
All occupations	131,463	53.8	46.2	84.4	11.1	10.1
Executive, administrative, and managerial	19,054	55.6	44.4	88.7	7.2	5.4
Professional specialty	19,883	46.7	53.3	86.3	7.9	4.6
Technicians and related support	4,261	46.4	53.6	83.5	10.4	6.6
Sales occupations	15,850	49.7	50.3	86.5	8.9	7.9
Administrative support, including clerical	18,410	21.4	78.6	82.7	13.1	9.0
Service occupations	17,836	40.5	59.5	77.4	17.6	15.0
Precision production, craft, and repair	14,411	91.7	8.3	88.3	8.0	12.4
Operators, fabricators, and laborers	18,256	75.4	24.6	80.0	15.7	16.0
Farming, forestry, and fishing	3,502	81.0	19.1	92.3	4.9	22.6

Source: BLS [1999].

\*Of any race.

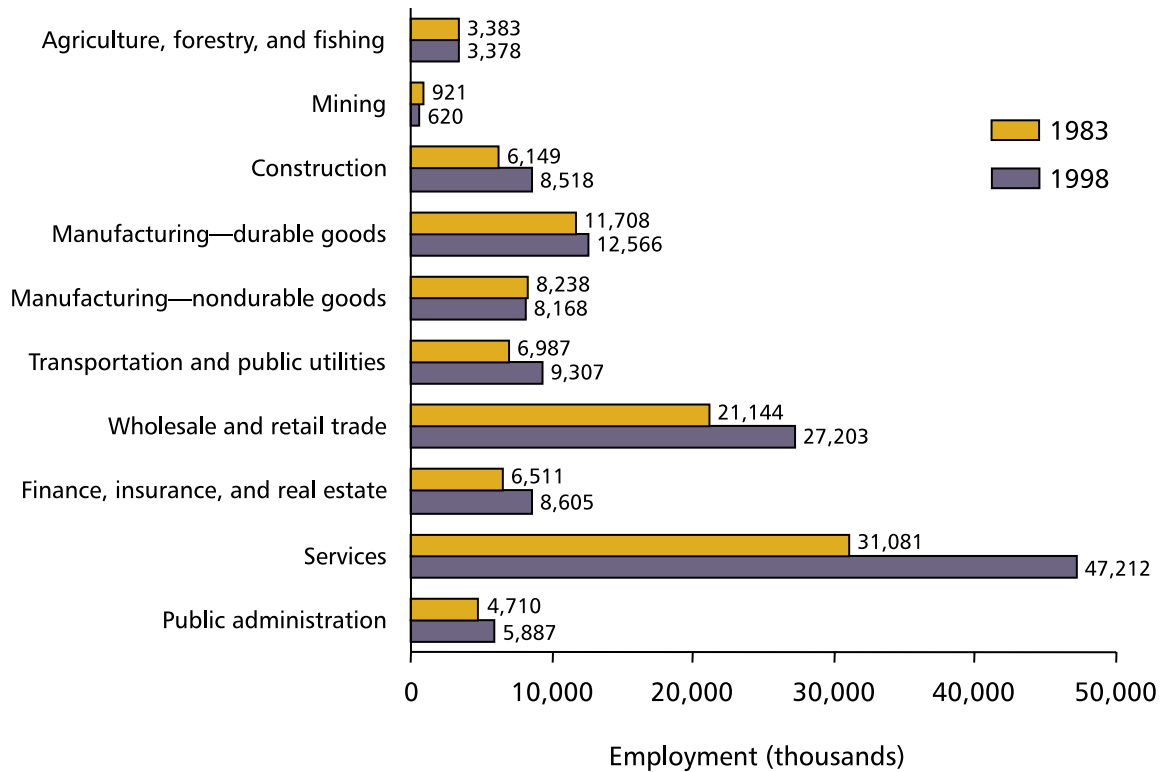


Figure 1–1. Employment by major industry division, 1983 and 1998. (Source: BLS [1999].)

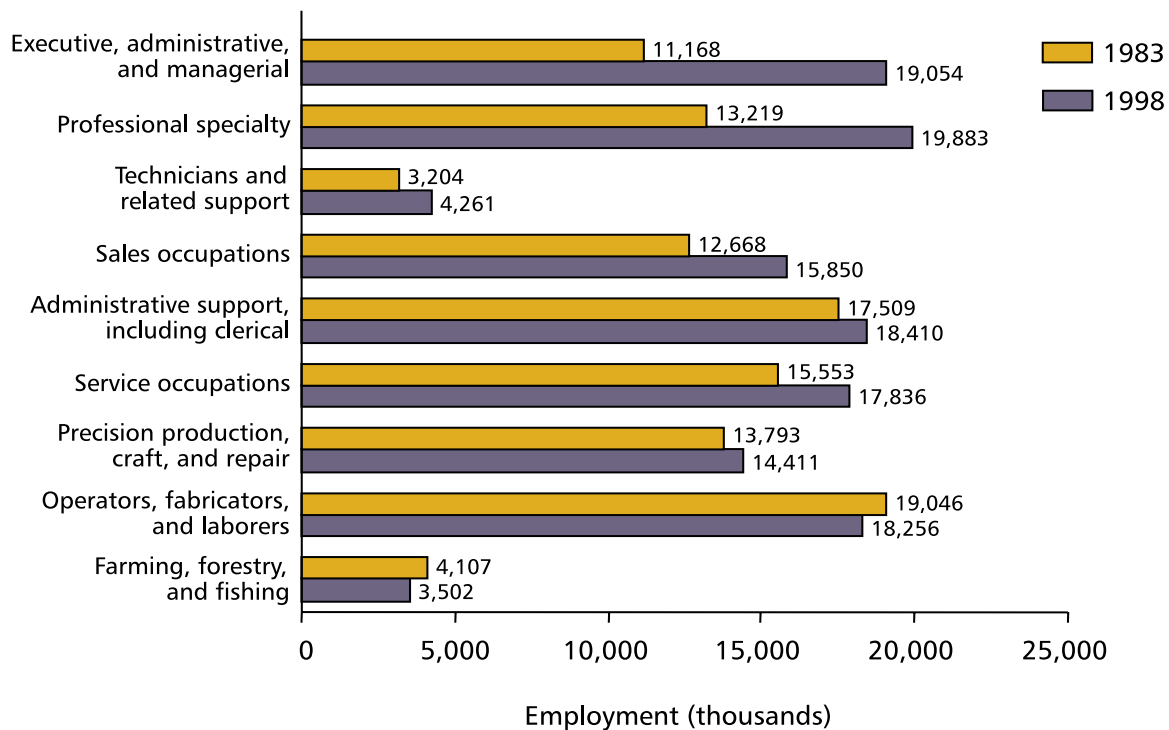


Figure 1–2. Employment by major occupational category, 1983 and 1998. (Source: BLS [1999].)

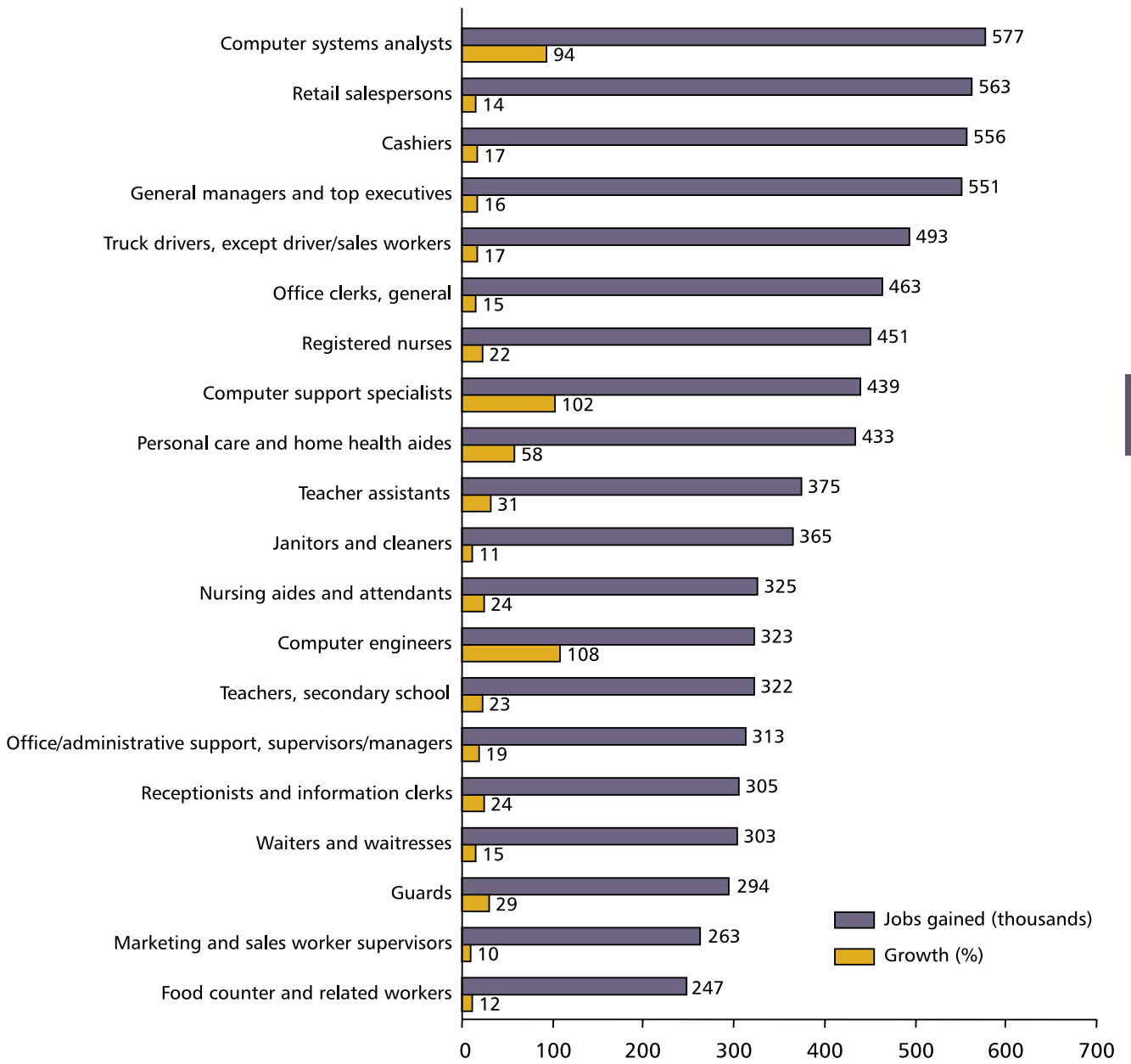


Figure 1–3. Employment growth in occupations gaining the largest number of jobs, projected for 1998–2008. (Source: BLS [2000].)

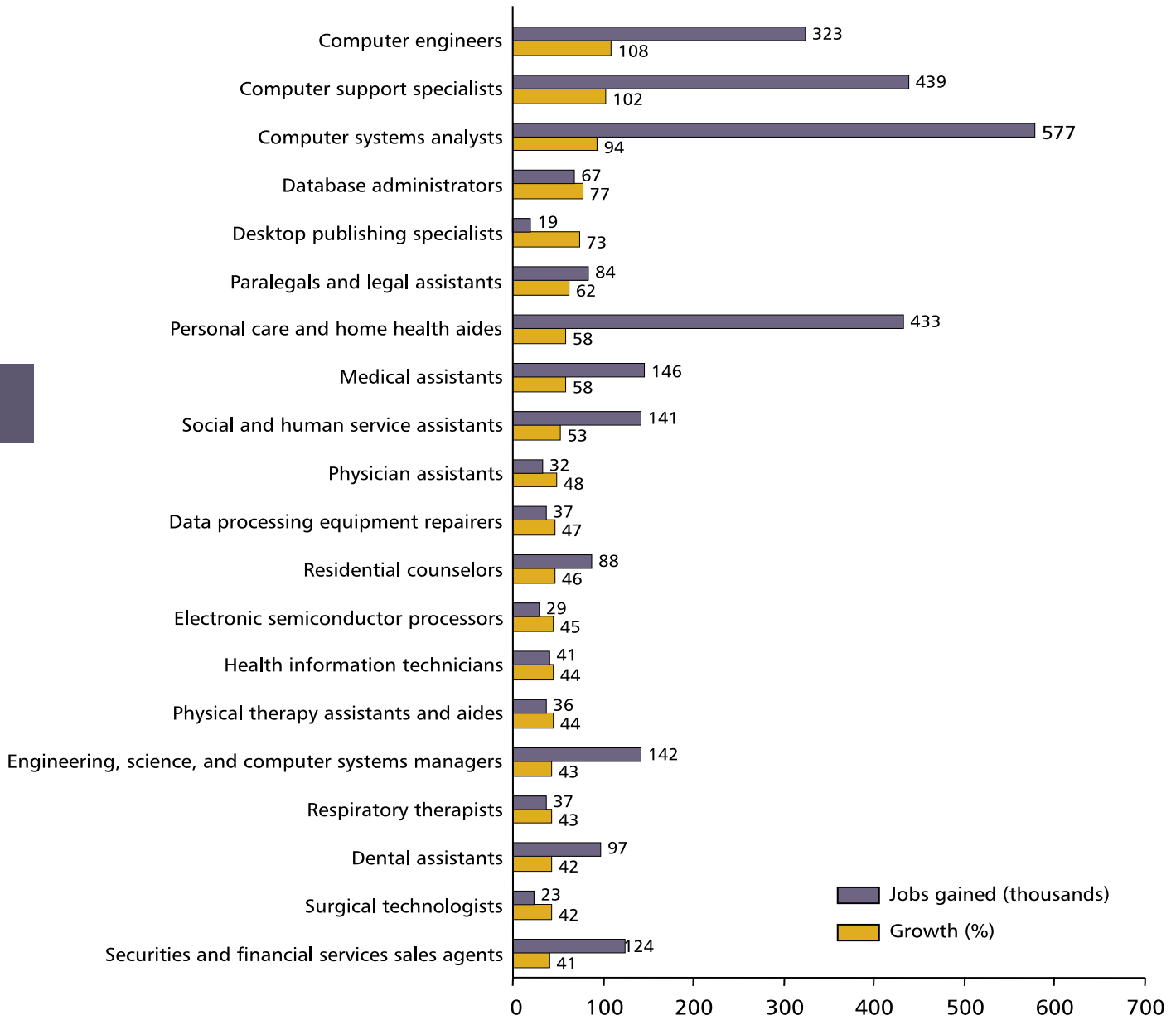


Figure 1-4. Employment growth in the fastest growing occupations, projected for 1998-2008. (Source: BLS [2000].)



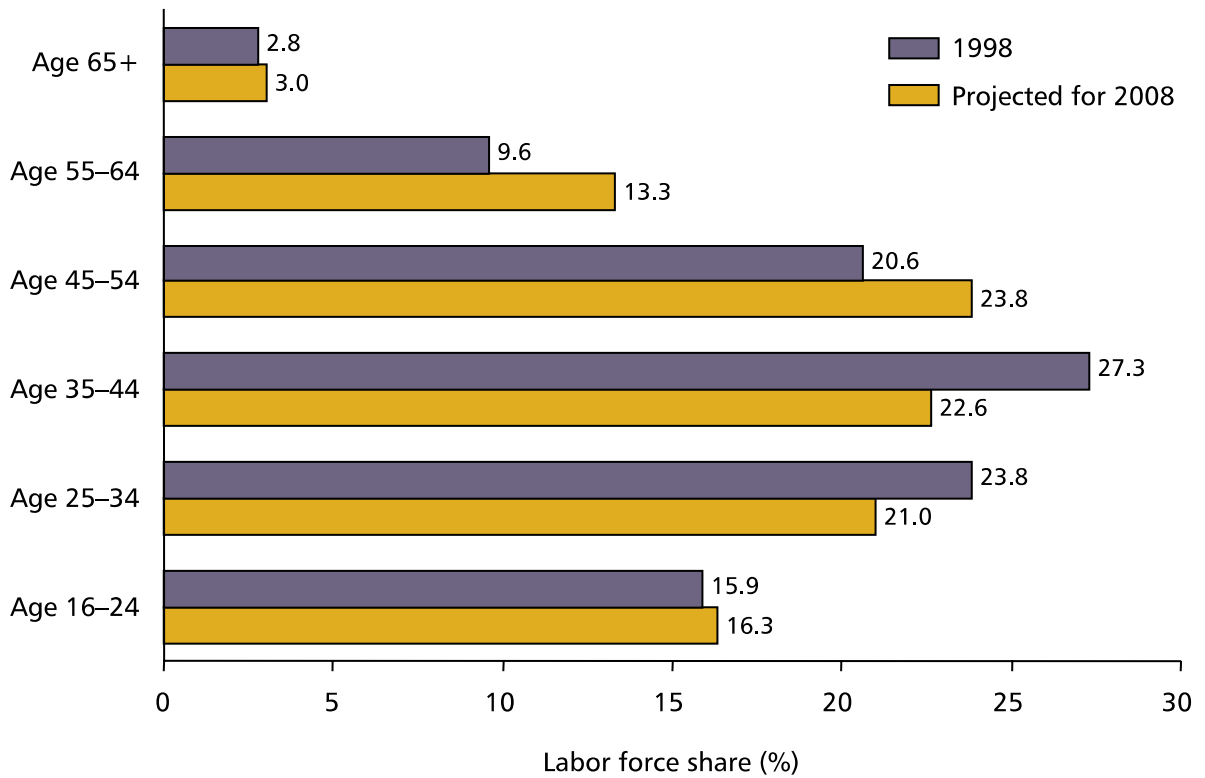


Figure 1-5. Distribution of the civilian labor force by age group, 1998 and projected for 2008. (Source: Fullerton [1999].)

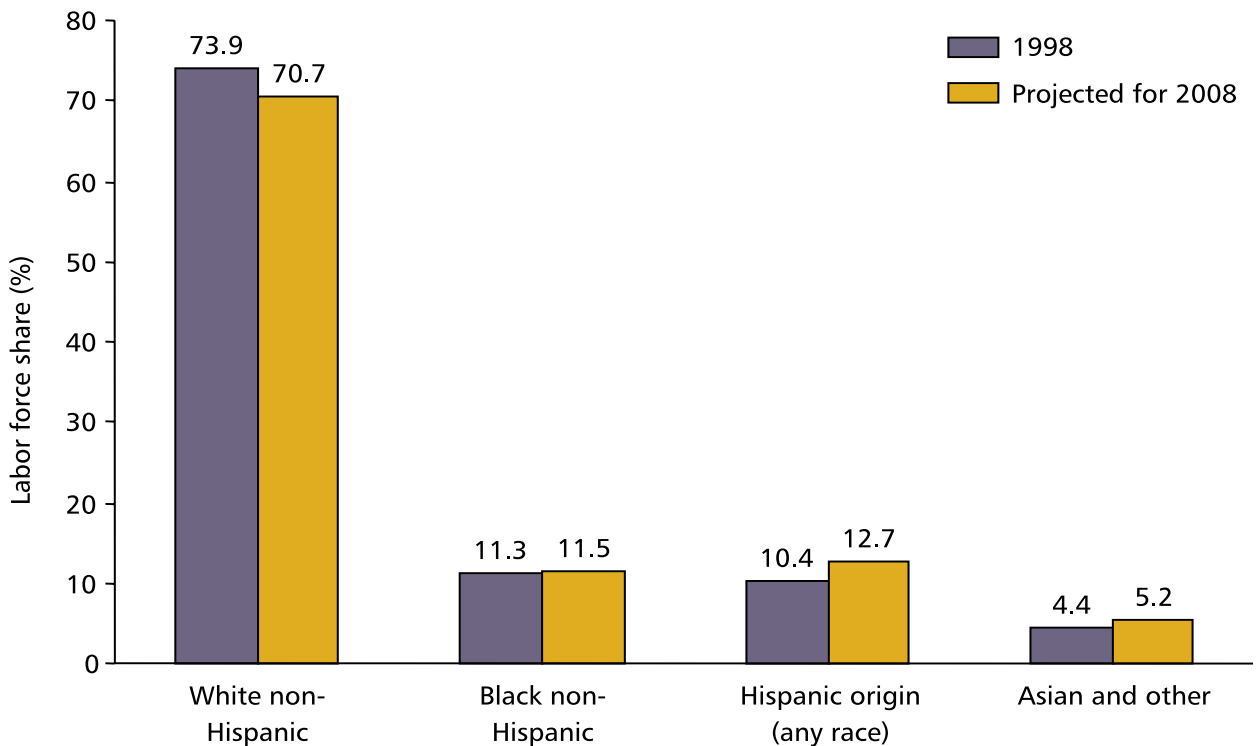


Figure 1-6. Civilian labor force share by race/ethnicity, 1998 and projected for 2008. (Source: Fullerton [1999].)