





# The outlook

## for college graduates, 1998-2008:

### A balancing act

by Chad Fleetwood and Kristina Shelley

**T**hrough 2008, jobseekers with bachelor's degrees should expect a graduation gift from baby boomers: a promising job market.

For the first time in many years, a Bureau of Labor Statistics (BLS) analysis finds that total college-level job openings between 1998 and 2008 will nearly equal the number of college-educated entrants to the labor force. And a primary reason is the large number of retirements expected from workers at the leading edge of the “baby boom” generation—those born between 1946 and 1964—who are in college-level jobs. The shift in balance will help shrink the total number of college graduates expected to end up in noncollege-level jobs or be unemployed to about 7 percent between 1998 and 2008, down from 14 percent over the previous decade.

In addition to encountering a more favorable job market, college graduates usually enjoy other benefits associated with more education. Notably, college graduates as a whole have lower unemployment and higher median earnings than do less-educated members of the labor force. In 1998, the strong economy was reflected in a low overall unemployment rate of 4.5 percent. College graduates fared better than that average, with unemployment of just 1.9 percent, and even better than the average of 4.9 percent for high school graduates. In terms of median earnings, college graduates earned about \$41,000 in 1998, compared with the \$23,000 that high school graduates earned—a premium of 78 percent.

Good prospects for college-level jobs, lower unemployment rates, and higher median earnings are strong incentives for attending college. Nevertheless, prospective students should consider other factors, such as which occupations will offer the most college-level jobs and which jobs are tailored to a student's particular skills and aptitudes. Nature of the work,

Chad Fleetwood is an economist formerly with the Office of Employment Projections, BLS. Kristina Shelley is a supervisory economist with the Office of Employment Projections, BLS, (202) 691-5726.

earnings, and advancement potential vary by occupation, even among college-level jobs.

Throughout this article, “college” refers to the bachelor's degree or higher level of educational attainment; “noncollege” refers to education less than a bachelor's degree, including the associate degree and bachelor's-level coursework that does not lead to a degree. The first section outlines analysis methods and college-graduate employment in 1998. The second section discusses the projected job market for college graduates between 1998 and 2008, including college-graduate entrants to the labor force and openings of college-level jobs. The final section puts it all together.

#### **Foundation: Methodology and historical data**

To understand the future job market for college graduates, it is important to consider past trends. Reporting historical data is of little value, however, without an explanation of how those data are derived. This section begins by describing the BLS approach to determining the college graduate job outlook, then examines data from the 1998 market.

#### **Analyzing the outlook for college graduates**

BLS projects the job market for college graduates by analyzing past and present job market conditions using several data sources and steps. As with most analytical and quantitative studies, however, some data limitations exist.

**Data sources and steps.** The analysis of the college graduate outlook has as its underpinnings the BLS occupational employment projections, the same projections that form the basis for the *Occupational Outlook Handbook*. Biennially, BLS develops 10-year employment demand projections using an economic model that includes a wide range of variables—including population trends, productivity, trade, and consumption—known to affect businesses' need for workers. BLS projects industry

employment by taking into account the future size and makeup of the labor force, projections of aggregate economic activity, demand for specific goods and services, and labor productivity. After further research, analysts develop detailed occupational employment projections. (For an in-depth discussion of the demand projection process, see the November 1999 *Monthly Labor Review: BLS Looks Ahead to 2008*.)

Projecting college-level jobs involves four steps. First, BLS matches data from the Current Population Survey (CPS) on educational attainment to data from the Occupational Employment Statistics survey used to develop total job growth. Second, it determines the proportion of jobs that are college level. Third, it projects those proportions. And fourth, it applies the proportions to total growth in occupations.

The National Center for Education Statistics (NCES) is the primary data source for the projected supply of new college graduates. NCES uses population and undergraduate enrollment trends in 4-year educational institutions to develop projections of bachelor's degrees conferred. This BLS analysis uses the NCES bachelor's degree projections published in *Projections of Education Statistics to 2009*, NCES 1999-038.

Future job market conditions are evaluated by comparing projections of college-level jobs to those of college graduate entrants during the same decade.

**Limitations.** The BLS analysis is a supply and demand study at an aggregate level. The study focuses on job prospects for college graduates as a whole, disregarding potential mismatches between the number of graduates by major and the number of jobs requiring specific college training. As a result, the demand projection for college graduates does not identify individual occupations that may experience shortages or surpluses of graduates.

Determining which jobs are college level also can be difficult. CPS data identify the proportion of occupations accounted for by college graduates, but some analytical judgment is necessary to decide which jobs actually require that workers have a college degree. In some occupations, such as teacher or doctor, the classification is clear: job entrants must have a bachelor's degree or more education. However, the requirements are less clear for many occupations employing college graduates. For this analysis, BLS used the following three assumptions to decide whether jobs are college level.

- ◆ All positions occupied by college graduates are considered college level in professional specialty; executive, administrative, and managerial; technician; and nonretail sales occupations. This assumption may seem obvious for some occupations—such as engineer, physicist, and lawyer—but

training requirements are less defined in many occupations—such as credit analyst and photographer—within these major occupational groups.

- ◆ Most jobs are classified as noncollege level in the following occupations: retail sales worker; service worker except police and detectives; agriculture worker except farm managers; and craft, operative, and laborer occupations except blue-collar worker supervisors. Many of these occupations require that workers have some training beyond high school, but that training usually need not include a bachelor's degree.
- ◆ Some positions filled by college graduates are not college-level jobs. Training and educational requirements are especially ambiguous and may be changing for a small number of occupations, including police and detective, farm manager, blue-collar worker supervisor, and several administrative support occupations, such as bookkeeping and accounting clerk. Although college graduates fill many jobs in these occupations, college-level training may not be necessary: according to responses to CPS surveys asking workers what kind of training they needed to perform their job, only a portion of the jobs required someone with a college degree. To estimate the number of college-level jobs, BLS used information from these surveys and from *Occupational Outlook Handbook* research.

### The 1998 college graduate labor force

The college graduate labor force comprises those who hold a bachelor's or higher degree and are employed or seeking employment. A picture of the college graduate labor force for a given year is formed by combining educational attainment data, employment status, and occupational data. In 1998, about 36 million college graduates were in the labor force. Of those, 1.9 percent (679,000) were unemployed, the lowest rate in nearly a decade. The remaining 35 million were employed, filling a wide range of both college- and noncollege-level positions across the economy. (See chart 1.)

More than two-thirds of the college graduate labor force worked in professional specialty or executive, administrative, and managerial occupations. Entry into many jobs in those occupational groups is limited to workers who have specific college training, an advanced degree, previous work experience, or special licenses.

Professional specialty occupations provided nearly 15 million jobs. The largest number of college graduates in this group worked as teachers, especially elementary and secondary school teachers and college and university faculty; engineers;



computer systems analysts and scientists; and registered nurses. Many jobs in professional specialty occupations—especially in teaching and health-related occupations—require workers to have specific college training that usually leads to mandatory certification or licensing. Another 9 million graduates worked in executive, administrative, and managerial occupations. Of those, more than two-thirds were in managerial positions that require training and experience in fields such as education, health, finance, and food service. Most of the remaining graduates were employed as accountants and auditors, management analysts, or other financial officers. Significant numbers of college graduates in the professional specialty and executive, administrative, and managerial groups also worked as social workers, lawyers, physicians, and property and real estate managers.

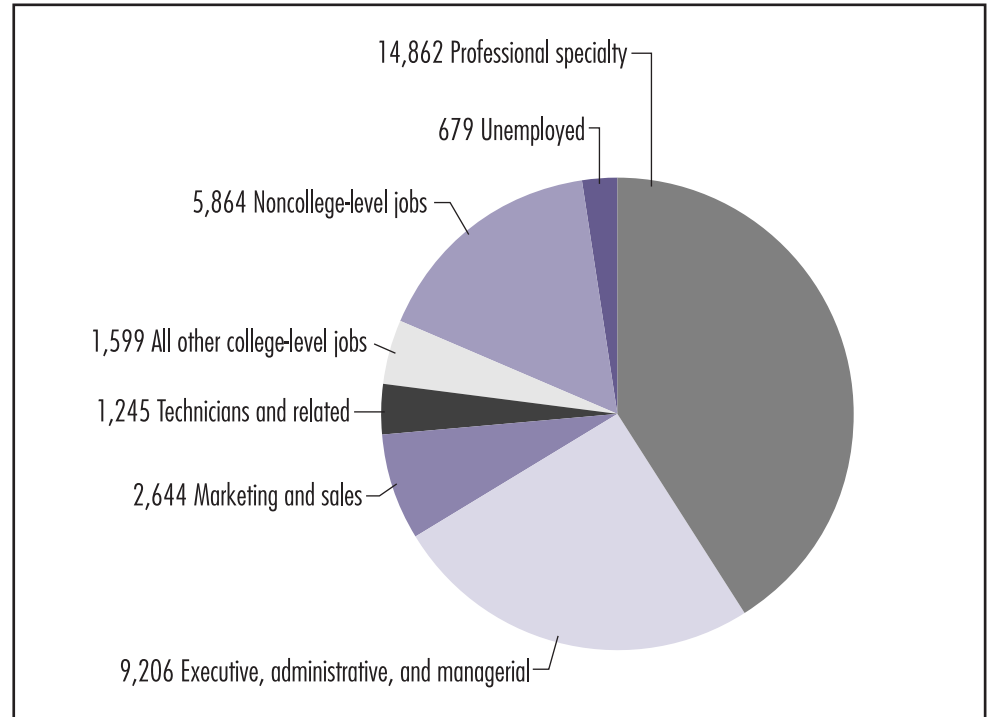
More than 1 in 10 college graduates held marketing and sales jobs. College graduates in this group worked as real estate agents, insurance sales agents, and first-line supervisors and managers, for example. Another 2.7 million college graduates, about 7 percent, were employed in administrative support including clerical occupations, such as secretary; bookkeeping, accounting, and auditing clerk; clerical supervisor and manager; and insurance claims processing worker. Nearly 1.8 million graduates, or 5 percent, worked in craft, laborer, and operative occupations, many as blue-collar worker supervisors. Another 1.3 million, or 4 percent, were employed in service occupations, such as police and detective. And about 1.2 million graduates, or 3.5 percent, were employed in the technicians and related support occupations group, nearly all as health technicians and technologists; engineering and science technicians; aircraft pilots and flight engineers; computer programmers; and legal assistants. Few college graduates were employed in the agriculture occupational group; college graduate employment in this group was concentrated in farmer and farm manager occupations.

**Noncollege-level employment.** Although most college graduates in the labor force in 1998 were employed, not all held

**Chart 1**

**College graduate labor force in college- and noncollege-level jobs, by occupational group, 1998**

(thousands)



college-level jobs. Using the classification process described previously to separate college-level from noncollege-level jobs, BLS estimates that in 1998 about 5.9 million college graduates, or 17 percent, were working in positions that traditionally do not require a bachelor's or higher degree. Significant numbers of college graduates worked as retail sales workers; food preparers and servers; motor vehicle operators; and in a variety of other occupations, such as administrative support including clerical and craft, laborer, and operator.

It is not clear why so many college graduates worked in these jobs, but several explanations are plausible. Some college graduates may settle for noncollege-level jobs—many of which require less responsibility and often are available on a part-time basis—while they pursue graduate studies or devote attention to their families. Some college-educated workers discover they prefer work, such as carpentry, that requires skills other than those learned in college. Others decide they would rather work in a noncollege-level job than relocate to another region that has better college-level job prospects. And some simply are unable to find college-level jobs because their academic

skills are marginal or because their major field of study does not prepare them for college-level jobs that are in demand.

## Outlook: Graduates and openings

The discussion of the college graduate job market now turns to 1998-2008 projections. This section begins with a look at the number of college graduates expected to enter the labor force during the decade, followed by projections of the number of college-level job openings.

### College graduate labor force entrants, 1998-2008

NCES data show that the number of bachelor's degrees conferred between 1998 and 2008 is expected to grow from 1.16 million to 1.24 million, an increase of 7 percent. In contrast, the number of degrees awarded during the previous decade jumped nearly 17 percent. (See chart 2.) The rapid growth surprised many educators, who expected enrollments and degrees to decrease along with a drop in the 18- to 24-year-old population—the traditional age for college students.

Boosting rates of enrollment and degree completions were higher numbers of older students attending college. Numbers of students in older age groups grew rapidly between 1988 and 1998. But as the 35- to 44-year-old population shrinks by about 8 percent over the projection decade, it will play a less important role in keeping enrollment levels high. The expected increase in college graduates during the projection period is largely attributable to resumed growth of the traditional college-age population of 18- to 24-year-olds. This age group, which declined during the 1988-98 period, is projected to grow 16 percent between 1998 and 2008.

NCES surveys provide information about what college graduates do after they earn their degrees. Survey responses show that most college graduates decide either to enter the labor force immediately or to continue their education and enter the labor force after earning

another degree. However, a small proportion of graduates does not enter the labor force. BLS adjusts the number of NCES-projected degree awards to reflect this information and to derive an estimated labor force entrance rate for new college graduates. BLS estimates show that more than 13.7 million college graduates are expected to enter the college graduate labor force during the projection decade, about a 5 percent increase over the 13 million who actually entered between 1988 and 1998. New college graduates will make up the majority—nearly 85 percent—of the total and will average about 1.16 million each year between 1998 and 2008. This compares with an average of 1.09 million per year over the 1988-98 decade.

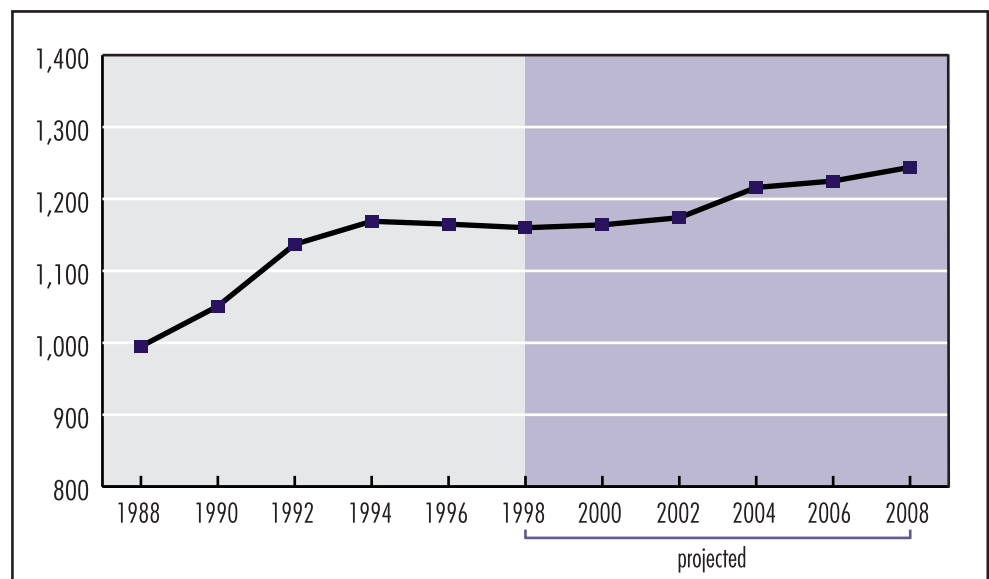
In addition to new college graduates, BLS projects that about 200,000 other college-educated individuals will enter the labor force each year between 1998 and 2008. This number is based on historical patterns of labor force entry and is estimated by measuring the college graduate labor force from year to year against the annual number of new college graduates. Although it is not possible to identify precisely who these other entrants are, they likely include former military personnel, immigrants, and degree holders entering the labor force for the first time despite having earned a degree years earlier.

Neither unemployed college graduates nor those working in

**Chart 2**

### Bachelor's degrees awarded, 1988-97 and projected 1998-2008

(thousands)



Source: National Center for Education Statistics



## College-level jobs, 1998, projected 2008, and projected change, 1998-2008 (numbers in thousands)

Occupational group	1998		Projected 2008		Projected change, 1998-2008	
	Number	Percent	Number	Percent	Number	Percent
<b>College- and noncollege-level jobs, total</b>	<b>138,450</b>	<b>100.0</b>	<b>158,730</b>	<b>100.0</b>	<b>20,280</b>	<b>14.6</b>
<b>College-level jobs, total</b>	<b>29,550</b>	<b>21.3</b>	<b>37,740</b>	<b>23.8</b>	<b>8,190</b>	<b>27.7</b>
Professional specialty	14,860	10.7	19,250	12.1	4,390	29.5
Executive, administrative, and managerial	9,200	6.6	11,320	7.1	2,120	23.0
Marketing and sales	2,640	1.9	3,400	2.1	760	28.8
Technicians and related	1,250	0.9	1,690	1.1	440	35.2
Administrative support	1,090	0.8	1,390	0.9	300	27.5
All other college-level jobs	510	0.4	690	0.4	180	35.3
<b>Noncollege-level jobs, total</b>	<b>108,900</b>	<b>78.7</b>	<b>120,990</b>	<b>76.2</b>	<b>12,090</b>	<b>11.1</b>

Note: Includes wage and salary and primary self employed.

noncollege-level jobs in 1998 are counted in this analysis. Between 1998 and 2008, however, both groups may be competing with new college graduates and other entrants to the labor force.

### College-level jobs, 1998-2008

The demand for college graduates depends on a number of factors. Among them are the growth of occupations in which many college graduates traditionally are employed, the upgrading of skills in jobs previously considered noncollege level, and the need to replace college graduates who retire from college-level jobs or leave the labor force for other reasons.

**Occupational growth.** Labor force growth and increased demand for goods and services drive employment growth for all workers. Between 1998 and 2008, labor force expansion will be similar to the increase during the 1988-98 decade; real output of goods and services is expected to increase at an average rate of 3.2 percent a year between 1998 and 2008, slightly higher than the average growth rate of 2.7 percent during the previous decade. However, expected higher productivity gains during the projection decade will slow employment increases, and the economy will generate 20.3 million new jobs, down somewhat from the 20.5 million jobs created in the earlier decade. Slower overall employment growth translates into slightly fewer new college-level jobs expected annually on average during the coming 10 years: 820,000 from 1998 to 2008, compared with the 858,000 annual job openings in the previous decade.

As in the last 10 years, however, the number of college-level jobs between 1998 and 2008 is expected to grow faster than that

of jobs for workers with less education. Jobs for college graduates are expected to grow nearly 28 percent, more than twice as fast as noncollege-level jobs. As a result of faster growth rates, jobs that require at least a bachelor's degree will continue to increase their share of total employment, from about 21 percent in 1998 to nearly 24 percent in 2008. (See table.)

Job growth continues to be the major source of new jobs for college graduates, accounting for nearly two-thirds of all college-level job openings. And driving the faster growth of college-level jobs is the fact that employment of college graduates is concentrated in occupational groups—such as professional specialty and technician—that have grown quickly in recent years and are expected to continue their rapid growth through 2008. Far fewer college graduates work in slower-growing occupational groups such as agriculture, production, and administrative support.

Of the 8 million new college-level jobs expected between 1998 and 2008, more than half—4.4 million—are in the professional specialty group. This occupational group is projected to grow 27 percent overall; college-level jobs within the group will grow even faster, about 30 percent. But within the group, growth rates and numbers of job openings vary among occupations that require workers to have a college degree. For example, openings for nuclear engineers are expected to increase by less than 6 percent over the 1998-2008 decade while openings for computer engineers, an occupation with similar educational requirements, are projected to grow over 100 percent.

Some professional specialty occupations—such as physician assistant—are growing rapidly but will add relatively few new

jobs each year because of the small number of workers employed in the occupation. Other occupations, while not growing rapidly, are expected to have many new jobs because of their large size: elementary school teacher, for example, is expected to grow slightly slower than the average rate of 14 percent but is second largest in employment size and therefore will provide many college-level job openings between 1998 and 2008. Still other occupations are both large and expected to grow rapidly, creating numerous jobs for college graduates. Examples include systems analyst, social worker, secondary school teacher, college and university faculty, physician, and registered nurse.

Executive, administrative, and managerial occupations will add another 2 million college-level jobs to the economy. Among the most rapidly growing occupations are management analyst, medical and health services manager, advertising and public relations manager, computer and information systems manager, and loan counselor and officer. Some large occupations, such as accountant and general manager and top executive, will provide many new jobs despite their slow growth.

The remaining occupational groups combined will add fewer than 2 million college-level jobs due to employment growth. Marketing and sales jobs that require workers to have a college degree will grow by 760,000, with most openings for first-line sales supervisors and managers, securities and financial services sales representatives, and other nonretail sales occupations, such as advertising sales agent and selected business service sales agent. Although college-level jobs in the technician and related support occupations will experience fast growth, the numerical increase will be limited to 440,000 because of the small size of that occupational group. Health technicians and technologists, computer programmers, engineering and science technicians, and legal assistants will add the most college-level jobs in the technician category. Within the service occupational group, college-level jobs are concentrated in police and detective positions. In production occupations, blue-collar worker supervisors account for all college-level jobs. No growth-related college-level jobs are expected to arise in agriculture because those jobs are concentrated in farming and farm management, occupations projected to decline.

**Educational upgrading.** The primary source of college-level job openings is the growth of occupations in which college graduates traditionally work. However, the upgrading of skill and education requirements in occupations in which college graduates do or could work is tied to college-level employment growth and accounts for numerous additional openings.

Educational upgrading occurs when changes in job duties, business practices, or technology lead employers to classify as college level some jobs that formerly were considered noncollege level. BLS projects educational upgrading by tracking historical changes in educational attainment for occupations that usually or may require college degrees and then extrapolating the historical trends to the final year of the projection period—in this study, 2008.

Upgrading within the professional specialty; executive, administrative, and managerial; technician; and nonretail sales occupations is relatively slow, as most jobs in such occupations already require college-level skills. For occupations that traditionally do not require that workers have a degree—including most administrative support, service, agriculture, production, repair, and laborer occupations—increases in the proportion of college graduates are assumed to reflect job preferences of the college-educated worker or the easy availability of college graduates to employers for other reasons, not because of actual skill or technology changes in the occupation.

For some occupations in these groups, however, increases in the proportions of college graduates result from changes in workplace requirements. Some police, for example, are increasingly taking on duties not formerly associated with conventional police work: in addition to patrolling and responding to crime reports, many now perform work that requires familiarity with psychology and social work. These academic subjects are typically learned in college and, over time, the proportion of police officers who need a college degree is expected to increase.

**Replacement needs.** The need to replace workers who leave the labor force is largely independent of factors, such as economic growth and changes in business practices or technology, that drive employment growth and educational upgrading. Instead, population trends and the demographic makeup of the labor force are the strongest influences on the rate of retirements, deaths, and long-term absences from the workforce.

Just as school enrollments, degrees earned, and entry into the labor force were dramatically affected by the large size of the baby-boom generation, the labor force, too, will experience major repercussions as baby boomers exit. Workers in this age group earned more college degrees than those in any age group before it, and the leading edge of baby boomers will approach retirement age during the 1998-2008 decade. Between 1988 and 1998, the 55-and-older age group increased by 4.3 million; from 1998 to 2008, the same age group will increase by 14 million. As noted at the beginning of this article, the job openings



created by this population trend will be a major factor in the improved outlook for college graduates.

On average, about 462,000 jobs are expected to open each year between 1998 and 2008 as college-educated workers leave the labor force, significantly more than the 266,000 replacement openings during the previous decade. (See chart 3.) Replacement needs, which accounted for less than 25 percent of all job openings between 1988 and 1998, represent 36 percent of all job openings projected between 1998 and 2008.

## Conclusions

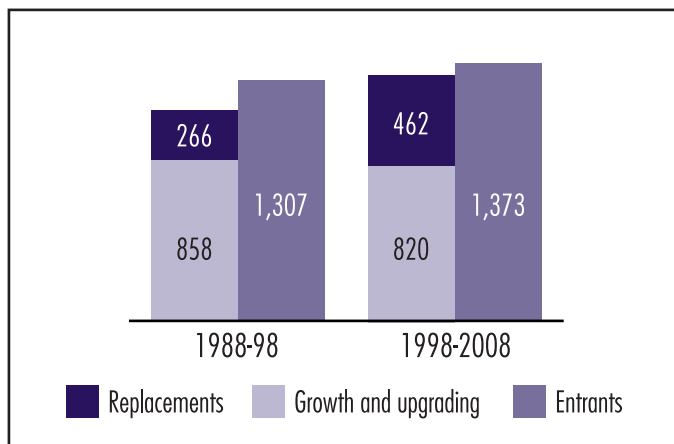
Throughout most of the 1990's, an average of 1.12 million college-level jobs opened each year while about 1.31 million college graduates entered the labor force to compete for those jobs. New college graduates and others comprise entrants to the college graduate labor force and, between 1998 and 2008, will number more than 1.37 million every year. Combining projections of job openings arising from employment growth, educational upgrading, and replacement needs indicates that about 1.28 million college-level jobs are expected each year during the same decade.

These projections are similar to past analyses, with college graduates who are expected to enter the job market outnumbering the expected college-level jobs available. Compared to previous

**Chart 3**

### Annual college-level job openings and college-graduate entrants, 1988-98 and projected 1998-2008

(thousands)



projections, however, the outlook for 1998-2008 shows the difference between the two numbers narrowing rapidly.

## Implications for college graduates

Although the employment outlook is improving, an average of more than 90,000 college graduates each year will continue to enter positions that do not require skills learned in a bachelor's degree program. Given past trends, these college graduates are likely to work in jobs including retail sales worker, waiter and waitress, mechanic and repairer, information clerk, records processing clerk, and adjuster and investigator and in miscellaneous support occupations such as bank teller. While some of these graduates will choose to enter such occupations for personal reasons, others will work in noncollege-level jobs because they cannot match their skills and knowledge with a college-level position.

As the college job market absorbs a greater proportion of college-educated entrants than in the past, college students' expectations for high earnings and job satisfaction may also increase. Such expectations are reasonable for students graduating with majors that prepare them to enter fast-growing, high-demand occupations. But competition for the most desirable jobs will, as always, remain keen. In addition to considering field of study, prospective employers evaluate job applicants on a number of criteria. These criteria include a student's overall grade point average, internship or other work experience, and evidence of leadership and strong communication skills. Full use of job search preparation services and experiential education opportunities, such as job shadowing, may give a job candidate the edge he or she needs to land a desired job.

## Further study

The decision to attend college often hinges on a number of reasons, including the desire for self-improvement, an interest in acquiring knowledge, and the wealth of experiences that accompany learning. However, careful planning is necessary if personal goals include high earnings and job satisfaction.

To learn more about employment, training and education requirements, and job prospects for occupations, refer to the *2000-01 Occupational Outlook Handbook* (BLS Bulletin 2520), found in most school career centers and public libraries. The *Handbook* is also available on the Internet at <http://stats.bls.gov/ocohome.htm>. For an industry perspective, see the *Career Guide to Industries* (BLS Bulletin 2523), also available online at <http://stats.bls.gov/cghome.htm>. 