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ABSTRACT

These five articles present analyses, graphs, and tables showing important trends in the employment of college graduates. The first one, "The Outlook for College Graduates, 1996-2006: Prepare Yourself" (Mark Mittelhauser), concludes that there are more jobseekers with college degrees than there are openings of college-level jobs. "The Class of 1993: One Year After Graduation" (Megan Barkume) reports on a survey of these graduates' employment status, continuing education status, academic performance, earnings, and employment in specific fields. The next article, "Trends in College Degrees" (Jonathan W. Kelinson), identifies trends in college degrees by educational level, field of study, and by college enrollment characteristics. The next paper, "Earnings of College Graduates in 1996" (Theresa Cosca), analyzes the median earnings for 1996 college graduates, the kinds of jobs they held, and the proportion of college graduates who earned less than the median for high school graduates. The final paper, "Occupations and Earnings of Workers with Some College But No Degree" (Daniel Hecker), compares occupational employment patterns and earnings data of this group with workers who have only a high school diploma and with those who have associate and bachelor's degrees. (DB)

Five Articles on College Graduates: Outlook, Earnings, and More

U.S. Department of Labor
Bureau of Labor Statistics

Reprinted from the Summer and Fall 1998 issues
of the *Occupational Outlook Quarterly*

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The Outlook for College Graduates, 1996-2006: Prepare Yourself

by Mark Mittelhauser

Popular films and novels have depicted college-educated workers stuck in low-paying, low-status jobs. Although the reality for most college graduates is not as bleak as the media portray, it is true that some graduates will not find jobs that make use of the college-level skills they've developed. The reasons for the frustrating problems these graduates face are complex. Part of their frustration reflects individual circumstances and mismatches between employers and jobseekers. But another part is simple mathematics: There are more jobseekers with college degrees than there are openings of college-level jobs.

This labor market dilemma for college graduates is not new. In fact, it has existed for more than a decade and is expected to continue. According to the Bureau of Labor Statistics (BLS), there were about 250,000 more college graduates entering the labor force each year between 1986 and 1996 than there were new college-level jobs. This number represents about 1 in 5 of the college-educated entrants to the work force. The difference between the number of college-educated entrants and college-level job openings from 1996 to 2006 is projected to remain around 250,000—which means 18 percent of new college graduates may not be able to find college-level jobs.

Why are so many high school students pursuing college degrees if they cannot be assured of college-level jobs upon graduation? The most likely answer is that the labor market favors college graduates—they earn more and experience lower unemployment rates than workers without a degree. In 1996, for example, workers with bachelor's degrees had median annual earnings of about $36,000, while college graduates with more advanced degrees earned around $40,000. In contrast, high school graduates who did not pursue higher education earned about $23,000. Over the course of a lifetime, these differences amount to a significant increase in earnings for those with college degrees. In addition, the college graduate labor force had an unemployment rate of 2.4 percent in 1996, which was less than half the 5.7 percent rate for those with high school diplomas.

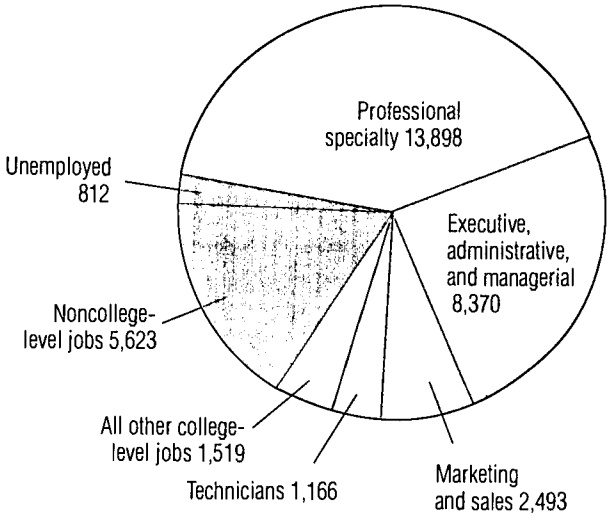
Aside from job market indicators, college graduates' labor market experiences are difficult to predict. Aggregate figures, such as those presented above, do not accurately portray the reality of many jobseekers. Millions of college graduates are happy in jobs that do not require degrees but offer other desirable characteristics, such as flexible hours or attractive working conditions. Also, some workers with high school diplomas carry out tasks usually associated with college graduates, and many college graduates perform duties that do not require a college degree. In other words, it is difficult to generalize about the employment outlook for such a diverse group of workers.

Developing the Projections

The college graduate outlook presented here is derived from supply and demand estimates of the college-educated labor force. Projections of the demand for college graduates are calculated using employment projections from the Office of Employment Projections of BLS. Every 2 years, this office develops projections covering a wide range of variables, including the U.S. labor force, industry output, productivity, and employment by occupation and industry. BLS bases its

Mark Mittelhauser is an economist in the Office of Employment Projections, BLS, (202) 606-5707.

Chart 1
College graduates in the labor force, 1996
(thousands)



projections on an analysis of the changing patterns of population growth, consumption, trade, and a host of other variables affecting employment. The most recent projections are discussed in the November 1997 *Monthly Labor Review; Employment Outlook: 1996-2006*, BLS Bulletin 2502; and the winter 1997-98 and spring 1998 issues of the *Quarterly*.

Estimates of expected college graduate entrants to the labor force are based on data produced by the U.S. Department of Education's National Center for Education Statistics (NCES). NCES analyzes demographic trends and educational patterns to develop projections of enrollment and completions at various levels of educational attainment. BLS used NCES estimates of bachelor's degrees awarded between 1982 and 1995 and projections through the year 2007 to determine the number of new college-level entrants each year. These figures are published in Projections of Education Statistics to 2007, NCES Bulletin 97-382.

Comparing the number of college-educated jobseekers with that of college-level job openings from each of these data sources is complicated because of the variety of entrants and openings. New college graduates constitute the majority of new college-educated entrants to the labor force. But a number of other entrants must also be accounted for, such as immigrants, people recently discharged from military service, and workers returning to the labor force after a long absence. Similarly, economic growth accounts for the majority of openings for college graduates.

College-level jobs also arise in two situations involving occupational change for workers already in the labor force. One is when educational requirements are increased, or upgraded, for occupations that previously did not require workers to have a college degree. The other is when workers with college-level jobs leave the labor force and need to be replaced by workers who have a college degree.

Another difficulty in determining the outlook for college graduates is the classification of college-level jobs. Few occupations exist in which all workers have and need a college degree. Doctors and lawyers clearly fall into this category, but most other occupations include workers with varied training and experience. These occupational requirements are constantly being modified as organizations adapt to changing economic conditions. In addition, job descriptions may be tailored to an individual who fills the position, so requirements for the same job may change from year to year. Finally, it may be difficult to determine which skills were gained in college and which are the result of other types of education or work experience.

The BLS approach for classifying jobs by educational attainment starts with assumptions about broad occupational groups. Remaining consistent with previous analyses, BLS considers workers to be in college-level jobs if they have college degrees and their jobs fall into professional specialty; executive, administrative, and managerial; or technician and related support occupations. For example, 76 percent of professional specialty workers, such as engineers and statisticians, who have college degrees are assumed to need these degrees in their jobs. On the other hand, a college degree is not required to work in some other occupational groups, such as retail sales; services, except police and detective; agricultural, except farm manager; and craft, operator, and laborer positions, except blue-collar worker supervisor. Regardless of their level of education, workers in these groups are assumed to be in jobs that do not require a college degree. For example, none of the nearly 120,000 truckdrivers who had a college degree in 1996 was considered to have a job that requires one.

There are many occupations, however, where such classifications are less clear. The educational requirements in these occupations are especially broad or may be constantly changing. As a result, some college graduates who work in these occupations may require a degree to perform their jobs, while others could perform them adequately without one. Police and detective, farm manager, blue-collar worker supervisor, and a

number of administrative support workers, such as secretary and bookkeeping and accounting clerk, are among these occupations. BLS determines which of these jobs are "college level" based on data from special supplements to the Current Population Survey (CPS) that indicate whether workers in each occupation need a college degree to perform their job duties. Workers with college degrees who need a college degree are considered to be in college-level jobs, while those who believe they could perform their jobs without a degree are classified as having noncollege-level jobs.

The College Graduate Labor Force in 1996

In 1996, about 33 million college graduates were employed in the United States. They worked in a wide range of occupations, but the majority were found in two groups—professional specialty occupations and executive, administrative, and managerial occupations. (See chart 1.) These 2 groups accounted for two-thirds of college-level employment, with professional specialty occupations providing nearly 14 million jobs and executive, administrative, and managerial occupations supplying another 8.4 million. Engineer, registered nurse, lawyer, teacher, physician, and social worker were among the professional specialty occupations that supplied the most jobs for college graduates. The executive, administrative, and managerial occupations employing the largest number of college graduates were accountant and auditor; marketing, advertising, and public relations manager; medical and health manager; and administrators and officials in public administration.

The balance of the remaining 33 million employed college graduates—about 10 million—were scattered among other occupational groups in 1996. About 3.8 million worked in marketing and sales occupations, where they held jobs such as nonretail commodity sales representatives; first-line supervisors and managers; real estate agents, brokers, and appraisers; and insurance sales agents. Administrative support occupations accounted for an additional 2.6 million workers. Occupations in this group include secretaries; bookkeeping, accounting, and auditing clerks; clerical supervisors and managers; and insurance claims processing workers. The remaining college graduates worked primarily as blue-collar worker supervisors, farm managers, and police or detectives.

Although all of those workers have college degrees, not all were employed in college-level jobs. About 5.6 million, or 17 percent, of them were employed in jobs that did not require a college degree. Many were in administrative support, retail sales, and service occupations, but over a million of these workers were also in production and craft occupations.

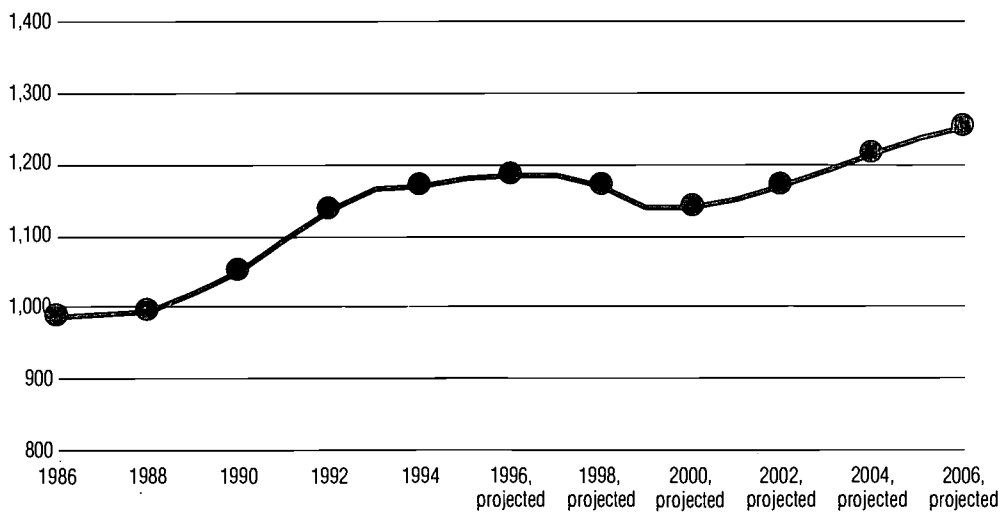
Projected Entrants with College Degrees

The most important group of college degree holders to enter the labor market each year is recent college graduates. According to NCES, about 1.19 million people were awarded bachelor's degrees in 1996. The number of college degree earners grew about 20 percent between 1986 and 1996, in spite of a decline in the traditional college-age population of 18- to 24-year-olds over most of the period. This increase in degree earners was primarily due to growing enrollments of women and of older people.

Chart 2

Bachelor's degrees awarded, 1986-96 and projected 1996-2006

(thousands)



Note: Degrees awarded as of the end of the academic school year (May-June).

In contrast, the Census Bureau projects growth in the college-age population between 1997 and 2000 while NCES projects a decline in the number of bachelor's degrees awarded over the same period. The number of bachelor's degree recipients is expected to resume growth in 2001. (See chart 2.) In fact, NCES projects the average number of degree earners each year between 1996 and 2006 will increase to about 1.19 million, up slightly from the 1.10 million recipients annually over the previous 10-year period. Nearly all of this growth is expected to be accounted for by women, who will comprise about 58 percent of all bachelor's degree earners by the year 2006. NCES estimates the number of men receiving bachelor's degrees each year will remain fairly constant between 1996 and 2006.

However, not all of these college graduates will join the labor force during the 1996-2006 period. Some will enter graduate school, start a family, or take a break for various reasons. NCES projects 1.19 million bachelor's degrees will be awarded between 1996 and 2006, a number similar to its projection for the previous decade. Of those recipients, BLS estimates about 1.15 million, or 97 percent, will enter the labor market. This figure is derived from historical patterns of labor force participation among recent college graduates.

In addition to recent college graduates, BLS projects that about 230,000 other degree holders will enter the labor force each year between 1996 and 2006. This number is based on comparisons between historical growth in the college educated labor force and the annual number of college graduates. These other entrants come from a variety of sources, including recently discharged military personnel, college-educated immigrants, and college degree holders returning to the labor force after a long absence. Not included in this group, however, are college graduates who are unemployed or who hold noncollege-level jobs and may be looking for college-level jobs. It is possible that some of these jobseekers might eventually compete with other college graduates in the labor market.

Each year between 1996 and 2006, recent college graduates and other college-educated entrants will make up an estimated 1.38 million college graduates entering the labor force. This will represent an increase of about 6 percent over the 1.3 million who entered the labor force annually during the previous decade.

Projected Job Openings, 1996-2006

The U.S. economy is projected to generate 1.13 million college-level job openings each year between 1996 and 2006, more than 8 percent above the 1.05 million job openings that arose annually over the previous decade. College-level job openings result from employment growth, educational upgrading, and replacement needs. Employment growth is a product of overall economic growth and the shifting demands for goods and services. As the need increases for workers in occupations employing many college graduates, so does the demand for college degree holders throughout the economy. Educational upgrading is an important component of growth that occurs as jobs which previously did not require a college degree for entry begin to require this level of education. Replacement job openings arise as college graduates leave the labor force, and the positions they held become available to other college graduates.

Employment growth. The largest source of new college-level job openings between 1996 and 2006 will continue to be employment growth. Openings due to growth are expected to average 750,000 each year over this 10-year period, accounting for about two-thirds of all college-level openings. As indicated above, the overall growth of the economy is a major determinant of college-level openings resulting from employment growth. Because BLS projects overall annual employment growth to slow from 1.7 percent over the 1986-96 period to 1.3 percent between 1996 and 2006, growth is projected to provide about 75,000 fewer college-level jobs each year during the 1996-2006 period than it did between 1986 and 1996.

The projected slowdown in employment growth is largely due to slower labor force growth, which BLS estimates will decline from 14 percent between 1986 and 1996 to about 11 percent between 1996 and 2006. This slowing in labor force growth reflects demographic trends. As workers in the baby-boom population begin to retire and the smaller population of the "baby bust" generation enters the labor market, overall labor force growth will slow. One result of these trends is a projected decline of nearly 3 million in the number of 25- to 34-year-olds between 1996 and 2006. Labor force growth is also influenced by the labor force participation rate of the working-age population. This rate is expected to continue to grow among women, although at a slower rate than in the previous 10 years, while the labor force participation rate of men is projected to continue to decline for all groups under age 45.

The projected slowing of employment growth is expected to have less impact on the college-educated labor force than on other workers in the economy, as growth in college-level jobs is projected to continue outpacing the growth of jobs which typically require lower levels of education. College-level jobs are expected to increase by 27 percent between 1996 and 2006, much faster than the 14 percent expected for all workers. (See table.) As a result, the proportion of college-level jobs relative to all jobs in the economy is expected to rise from around 21 percent in 1996 to slightly over 23 percent in 2006.

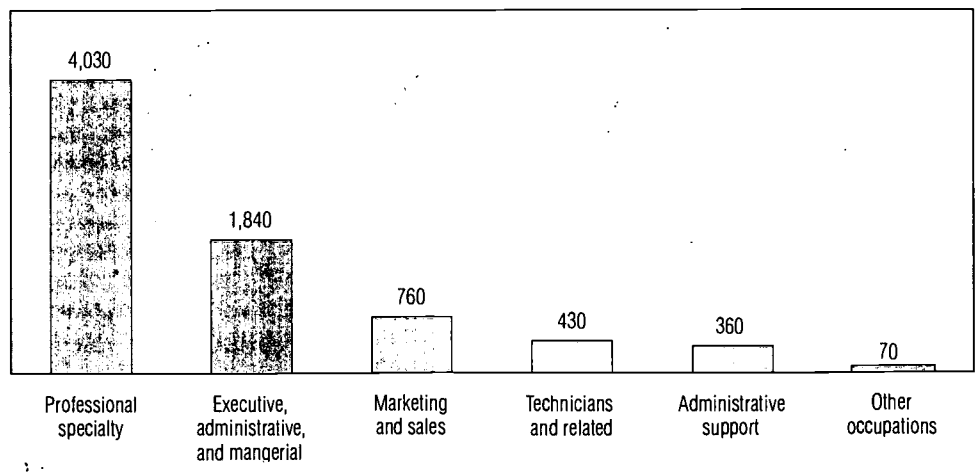
Employment in college-level jobs, 1996, projected 2006, and projected change, 1996-2006
(numbers in thousands)

Occupation	1996		2006, projected		Projected change, 1996-2006	
	Number	Percent	Number	Percent	Number	Percent
Total	132,330	100.0	150,940	100.0	18,610	14.1
College-level jobs	27,450	20.8	34,940	23.1	7,490	27.3
Executive, administrative, and managerial	8,370	6.3	10,210	6.8	1,840	22.0
Professional specialty	13,900	10.5	17,930	11.9	4,030	29.0
Technicians and related	1,170	.9	1,600	1.1	430	36.8
Marketing and sales	2,490	1.9	3,250	2.2	760	30.5
Administrative support	1,060	.8	1,420	.9	360	34.0
All other college-level jobs	460	.3	530	.4	70	15.2
Noncollege-level jobs	104,880	79.3	116,000	76.9	11,120	10.6

One reason college graduates will fare better than workers in other educational groups is the occupational distribution of growth. The major occupational groups that provide college-level jobs are expected to grow more rapidly than the 14-percent increase in employment for the economy as a whole. Professional specialty occupations, the largest source of college-level jobs, will be the fastest growing occupational group including both college- and noncollege-level jobs. In contrast, the occupational groups expected to grow more slowly than average—agricultural, craft and other production, and administrative support occupations—employ a relatively small share of college graduates.

As a result of these trends, professional specialty occupations will continue to add more college-level jobs over the projection period than any other occupational group. (See chart 3.) In fact, between 1996 and 2006, professional specialty occupations will account for more than half of all college-level openings due to growth—about 400,000 jobs each year. The occupations that will add the most jobs in this group are computer engineers, computer scientists, and systems analysts. These occupations are expected to be among the fastest growing in the economy. In fact, their combined occupational employment is expected to double over the 1996-2006 period. Other professional specialty occupations projected to provide many job openings are engineers, teachers, registered nurses, therapists, physicians, and social workers. The growth of many of these occupations is the result of the expanding use of computers and increasing

Chart 3
Projected college-level job growth by occupational group, 1996-2006
(thousands)



need for health care projected as the baby-boom population ages.

The next largest number of college-level job openings is expected to occur in executive, administrative, and managerial occupations. Employment in college-level jobs within this group is projected to grow annually by 185,000 between 1996 and 2006. Most of the new jobs will arise among managers, including food service and lodging managers, financial managers, and marketing, advertising, and public relations managers. Some management support occupations, such as accountants and auditors, management analysts, and personnel, training, and labor relations specialists and managers, will also add new college-level jobs.

The remaining 164,000 college-level job openings arising due to growth each year will be distributed among other major occupational groups. In marketing and sales occupations, the largest source of college-level openings will be sales representatives who sell financial securities, real estate, machines, and a variety of other commodities. The technicians and related support occupations that will add the most college-level jobs are health, engineering, and science technicians, computer programmers, and legal assistants. A number of administrative support occupations, such as clerical supervisors, teacher aides, insurance claims processing workers, and bookkeeping, accounting, and auditing clerks will also add new college-level jobs. Finally, about 8,000 new college-level jobs will arise each year among blue-collar worker supervisors between 1996 and 2006. Agricultural and service occupations are expected to provide limited growth in college-level jobs.

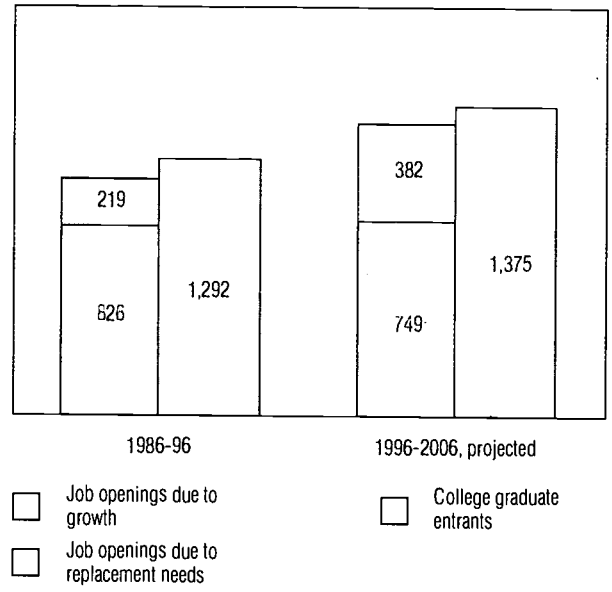
Educational upgrading. Many of the new openings created by growth reflect a related phenomenon—educational upgrading. When organizations restructure or change, they rely on workers in certain occupations to assume new responsibilities. As a result of a reduction of the number of middle managers, for example, firms have shifted some managerial responsibilities to other workers. One result of this trend is that some workers classified as secretaries may now be training new employees, performing research, or working with spreadsheets—tasks often associated with skills developed in college. Along with the new duties may come new titles, such as administrative assistant or administrative aide, but these workers might still be counted as secretaries in government surveys. As educational requirements are upgraded, subsequent job openings are considered to be new openings in college-level jobs.

BLS estimates educational upgrading by tracking changes in educational attainment for occupations which require college degrees. For most of these occupations, including professional specialty, technician, nonretail sales, and executive, administrative, and managerial occupations, projections of educational upgrading are developed by analyzing the trend of college-educated workers in each occupation. For the remaining occupations with college-level jobs, such as farm managers, secretaries, and police and detectives—those in which it is not assumed college-educated workers need a degree to perform their jobs—estimates are based on analyses of trends in CPS surveys which track degree requirements for each occupation.

Chart 4

College graduates entering the labor force and job openings, 1986-96 and projected 1996-2006

(thousands)



Of the 750,000 college-level job openings projected to arise annually between 1996 and 2006 due to economic growth, about 160,000—1 in 5—will result from educational upgrading. This is significantly lower than during the previous 10-year period, in which 250,000 openings were estimated to have arisen annually due to upgrading. Occupational distribution of upgrading is the major reason for this downturn. Upgrading is occurring slowly in the occupational groups that include most college-level jobs, while groups with relatively few college-level jobs are increasingly producing more job openings for college graduates. For example, marketing and sales and administrative support occupations are projected to provide 40 percent of openings due to upgrading between 1996 and 2006, yet these 2 groups supplied only 13 percent of college-level jobs in 1996.

Replacement openings. Replacement openings are job openings that arise as workers leave the labor force to retire, take a break, return to school, or raise a family. By leaving the labor force, these workers create openings for other college-educated workers. BLS uses data on age distribution and labor market behavior to develop net replacement rates; these rates are used to estimate the number of openings resulting from separations each year and to project the number of labor force entrants needed to replace workers who leave the labor force.

Replacement openings will be an important source of college-level job openings as the baby-boom generation enters age groups with higher rates of retirement. The number of expected openings arising annually from replacement needs is projected to increase from 219,000 over the 1986-96 period to about 380,000 annually between 1996 and 2006. (See chart 4.) Openings due to replacement needs are expected to mirror the distribution of college-level jobs across major occupational groups. Professional specialty and executive, administrative, and managerial occupations will account for about four of every five replacement openings, while other openings will be distributed across the remaining occupational groups.

Jobseekers Exceed Job Openings

Similar to the results of previous BLS studies, the projections outlined above indicate that, between 1996 and 2006, there will be more college degree holders entering the labor force each year than the number of college-level job openings. An average of 1.38 million entrants will be met with approximately 1.13 million college-level job openings each year, a projected annual difference of about 250,000. The size of this difference remains almost unchanged from the previous 10-year period, as the number of both projected entrants and openings is expected to grow at approximately the same rate over the 1996-2006 period.

The proportion of college graduates who do not find employment in college-level jobs—projected to be about 18 percent between 1996 and 2006—will most likely work as sales representatives, first line supervisors, clerks, secretaries, service workers, farm managers, and as various production and blue-collar workers. As mentioned previously, many workers choose these positions because they offer desirable job characteristics. However, some college-educated workers in these positions would rather have the earnings, status, and other qualities typically associated with college-level jobs.

Degrees, Skills, and Jobs

As the number of new college-educated entrants continues to exceed the available college-level jobs, the job market will continue to frustrate many college graduates. The level of frustration will vary widely based on major field of study, individual aptitude, personal circumstances, and geographic location. Applicants whose majors are in high demand, such as computer engineering, are likely to find jobs more easily and receive higher salaries than jobseekers with degrees in other fields, such as philosophy. Similarly, graduates looking for work in areas where the local economy is booming are likely to be more successful than those seeking work in economically depressed areas. More than ever, jobseekers need to become familiar with the job market in their chosen fields and tailor their skills to the requirements of employers.

Because of the potential value of a college degree over a worker's lifetime, investment in a college education is still worthwhile. College graduates need to realize, however, that not all college degrees are created equal. An article by Frederic Pryor and David Schaffer in the July 1997 *Monthly Labor Review*, "Wages and the University Educated: A Paradox Resolved," underscores this point. The authors found that the labor market success of college graduates is highly correlated with the skills college graduates bring to the workplace. Graduates with a high level of functional literacy—the ability to read, interpret documents, and perform quantitative calculations in real-life situations—were more likely to be employed in college-level jobs. In contrast, college-educated workers with low functional literacy were more likely to be employed in what were called "high school jobs." The researchers stressed the fact that functional literacy is learned and that success in the labor market is influenced by the efforts of each college graduate.

In a labor market with more college-educated entrants than college-level openings, recent college graduates are well-advised to carefully study the changing employment and earnings of the Nation's occupations and industries. Although a detailed discussion of specific occupational growth is beyond the scope of this article, the above analysis points to major occupational groups that are expected to provide the most college-level openings between 1996 and 2006. More detailed information on working conditions, employment, training requirements, earnings, and job outlook for about 250 occupations, covering 6 of every 7 jobs in the economy, is in the 1998-99 *Occupational Outlook Handbook*. In addition, the 1998-99 *Career Guide to Industries* provides similar information from an industry perspective. These publications are found in most public libraries, career centers, and guidance counselors' offices. The *Handbook* is also accessible online at **http://stats.bls.gov/ocohome.htm** As the quest for college-level jobs continues, these publications can help you get a step up on your competition—and there will be plenty of it.


To Do
Job interview w/ ARC
Finish resume
Follow up with IRW
Airline ticket
Call Pat about stay over
Car insurance
DIRECTORS
ACCEPTANCE
UNDERWRITERS
REGISTRATION ANALYST
OPERATIONS ASSISTANT
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The Class of 1993: One Year After Graduation

by Megan Barkume

The number of bachelor's degrees awarded by U.S. colleges and universities rose in 1993 for the 16th straight year to a record 1.17 million. How did these graduates fare in the job market? Did they find work that made use of their academic training? How many enrolled to continue their studies? Did academic performance affect their employment or school enrollment status? What did they earn? These questions are answered by a U.S. Department of Education survey of the class of 1993.

The 1993 survey is the latest in a series of followup studies of college graduates 1 year after graduation. The Department of Education has also conducted surveys for the classes of 1977, 1980, 1984, 1986, and 1990. In addition to information contained in these previous studies, the latest survey looks at the correlation between academic performance and success in the job market. It will also track the graduates over a 12-year period to provide information on their academic enrollment, degree completion, employment, and public service.

This article describes the employment status, continuing education status, effects of academic performance, and earnings of 1993 college graduates as of April 1994. The Bureau of Labor Statistics (BLS) has analyzed these data for the graduates as a group and for each of 11 major fields of study:

- Biological sciences
- Business and management
- Education
- Engineering
- Health professions
- History
- Humanities
- Mathematics, computer sciences, and physical sciences
- Psychology
- Public affairs
- Social sciences.

Comparisons are also made between professional fields and arts and sciences fields, as defined by the Department of Education.

Employment Status

About 92 percent of the class of 1993 were in the labor force 1 year after graduation, up from 89 percent for the last comparable class in 1990. (See table 1.) This increase reflects a

Table 1
Labor force and graduate school status of new graduates, selected years
(percent)

	Class					
	1977	1980	1984	1986	1990	1993
Total in labor force	86	86	86	89	89	92
Employed full time	69	70	71	73	74	73
Employed part time	12	12	12	12	11	14
Unemployed	5	4	3	4	4	5
Not in labor force	14	14	14	11	11	9
Enrolled in graduate school	25	26	23	24	35	27

Megan Barkume is an economist formerly with the Office of Employment Projections, BLS.

gain in part-time employment. The proportion of unemployed graduates has been relatively stable between 1977 and 1993.

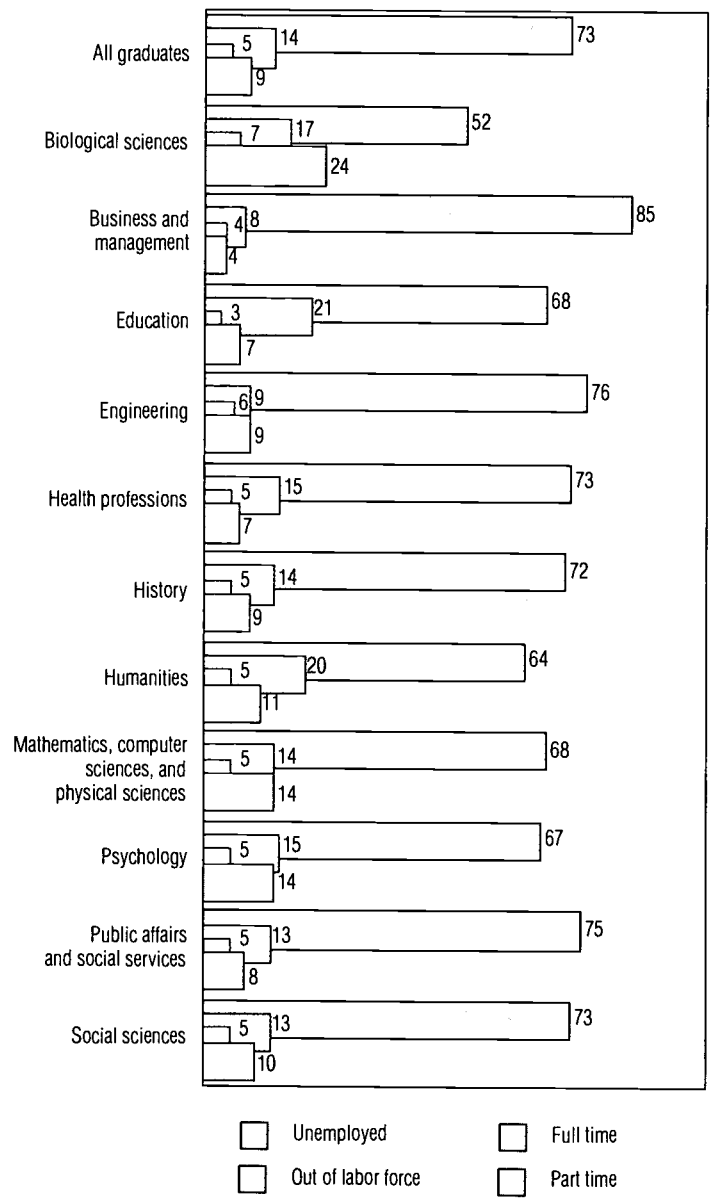
The class of 1993's labor force participation rate—the proportion of those graduates employed full or part time or seeking work—varied by field. College graduates with a bachelor's degree in professional fields—business and management, education, engineering, health professions, and public affairs and social services—were usually able to find entry-level work in their field of study. Many graduates in arts and sciences fields—biological sciences; mathematics, computer sciences, and physical sciences; social sciences; history; humanities; and psychology—needed additional education to pursue work in their field.

As a result, graduates with a bachelor's degree in professional fields had a higher labor force participation rate (94 percent) than those with a bachelor's in arts and sciences (87 percent). Chart 1 shows the breakdown in employment status by field of study. For example, 85 percent of business and management majors were employed full time, compared to 52 percent of graduates in biological sciences. Education majors had the lowest proportion of graduates unemployed (3 percent),

Table 2
Full-time enrollment in continuing education, by major
(percent)

Baccalaureate degree major	Full-time students in continuing education
Total	**26.1**
Professional fields	**8.6**
Business and management	5.0
Education	10.9
Engineering	14.6
Health professions	10.5
Public affairs and social services	8.7
Arts and sciences	**17.5**
Biological sciences	26.6
History	18.2
Humanities	14.2
Mathematics, computer sciences, and physical sciences	20.5
Psychology	18.4
Social sciences	14.4

Chart 1
Employment status of college graduates, class of 1993, by major, in 1994
(percent)



less than half the percentage of biological sciences majors (7 percent). However, both the lowest and highest proportions of part-time workers were within professional fields: Business and management degree graduates had the lowest proportion (8 percent), while education had the highest (21 percent).

New graduates were surveyed about whether they felt their jobs required a degree, were related to their major, and had career potential. (See chart 2.) In general, graduates who majored in professional fields responded more positively to these questions than did arts and sciences graduates. Disciplines such as business, education, engineering, and health professions are closely related to occupations for which a bachelor's degree is sufficient for entry. On the other hand, disciplines such as biological sciences, social sciences, history, and psychology are associated with occupations for which a master's or doctoral degree is usually required. Mathematics, computer sciences, and physical sciences majors had the highest proportion among arts and sciences majors responding that their jobs required a degree, were related to their major, and had career potential.

Continuing Education Status

Twenty-six percent of all class of 1993 graduates were continuing their education within 1 year of receiving their bachelor's degree. Of those, 17 percent were enrolled in graduate or professional school, 4 percent had enrolled in bachelor's or associate degree programs, and about 6 percent were not pursuing a formal credential. (See chart 3.) Those with degrees in arts and sciences fields had a higher continuing education enrollment proportion (23 percent) than graduates in professional fields (15 percent).

Graduates of professional fields and of arts and sciences fields had much different levels of full-time graduate or professional school enrollment. (See table 2.) Less than 9 percent of graduates who majored in professional fields were enrolled, while the proportion for arts and sciences graduates was more than double that. Many arts and sciences graduates took preprofessional programs, such as prelaw and premedicine, or planned to enter occupations for which a master's or doctoral degree is usually required.

Other class of 1993 graduates who were not enrolled in school 1 year after earning their bachelor's degree still planned to continue their education at a later date. Many graduates, for example, said they would delay additional study to gain work experience before returning to school. These graduates planned to resume their education in the future, as indi-

Chart 2

Relation of current job to major field and career potential of job, class of 1993, by major field of study

(percent)

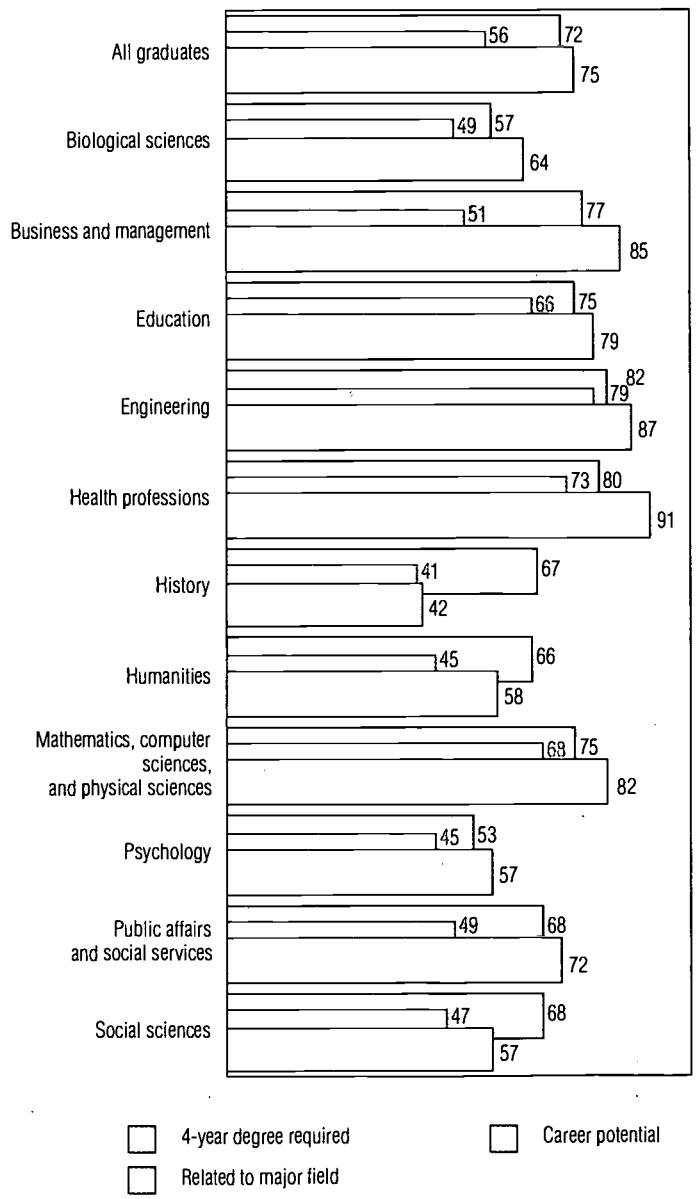


Chart 3

Educational status of college graduates, class of 1993, in 1994

(percent)

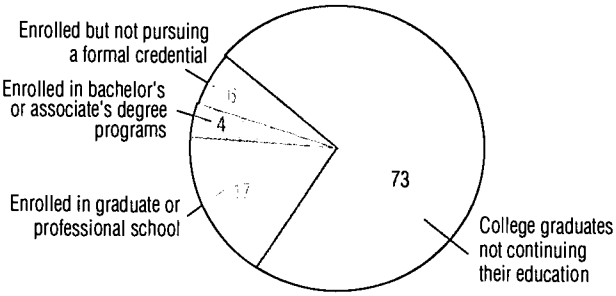


Table 3

Class of 1993 employment, career potential, and continuing education status in 1994, by GPA

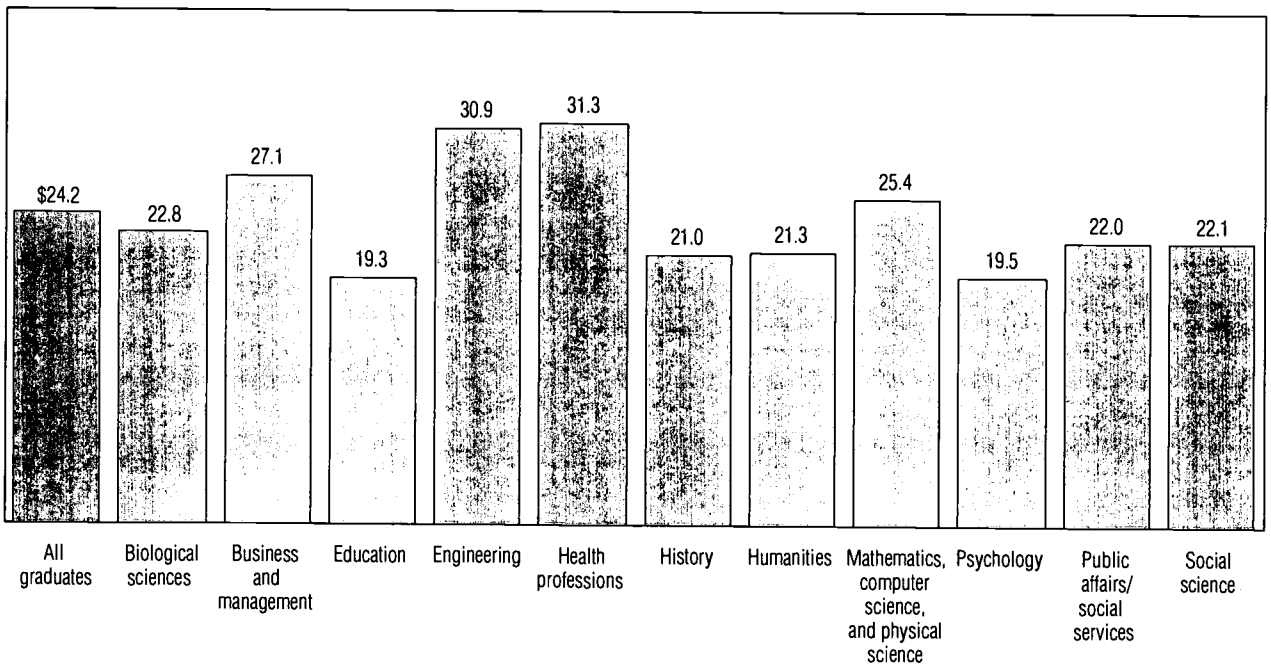
(percent)

	Employment status				Career potential		Continuing education status		
	Working		Not working						
Cumulative GPA	Full time	Part time	Unemployed	Not in labor force	Definite/ possible potential	Job related to degree	Enrolled full time	Enrolled part time	Not enrolled
3.5 or higher	67	16	4	13	74	79	18	6	77
3.0-3.49	74	13	5	8	72	77	12	6	82
Under 3.0	78	13	5	4	70	70	8	6	87

Chart 4

Average salary of graduate employed full time, class of 1993, by major field of study, 1994

(thousands of dollars)



cated in the following tabulation of the educational aspirations of class of 1993 graduates in 1994:

	Percent
No plans	16
Postbaccalaureate certificate	1
Pursue degree	
Master's	59
Doctoral	17
First professional	6
Other	1

Academic Performance

Graduates' employment and enrollment status is also related to their academic performance. (See table 3.) Class of 1993 graduates with the highest grade point average (GPA) had the lowest unemployment rates; these graduates also were most likely to hold jobs that had definite or possible career potential and were related to their major. In addition, graduates with the best grades were much more likely to be enrolled full time in graduate school and, as a result, to be out of the labor force. Graduates with a GPA of 3.5 or higher, for example, were more than twice as likely to be enrolled in continuing education as those with a GPA of less than 3.0.

Earnings

Earnings varied by major and occupation. (See charts 4 and 5.) Graduates who majored in health professions and engineering had the highest average salaries of all graduates; education and psychology graduates earned the least. Earnings data show similar results for the occupations associated with those fields: The highest paid workers had jobs in engineering and health professions; the lowest earners worked in service occupations such as waiter, child-care worker, nursing aide, and teacher.

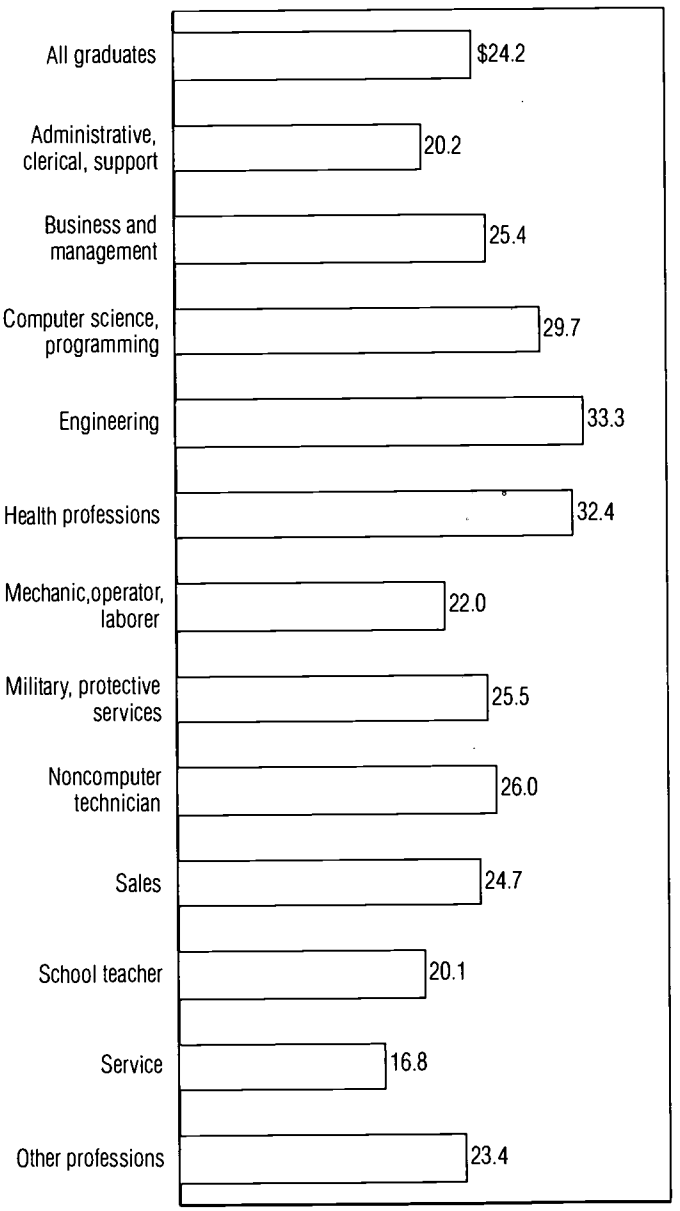
Limitations of the Data

The information in this article should be helpful to individuals selecting a major field of study because it indicates the range of job possibilities for graduates with a degree in the fields discussed. However, the reader should be aware that the data are affected by the size of the sample, the time at which the survey was taken, and the qualifications of candidates other than their academic major—for example, minor fields of study, other courses, extracurricular activities, work experience, grades, quality of the school, and personality traits. Also the information was collected only a short time after

Chart 5

Average salary of graduates employed full time, class of 1993 by occupation, 1994

(thousands of dollars)

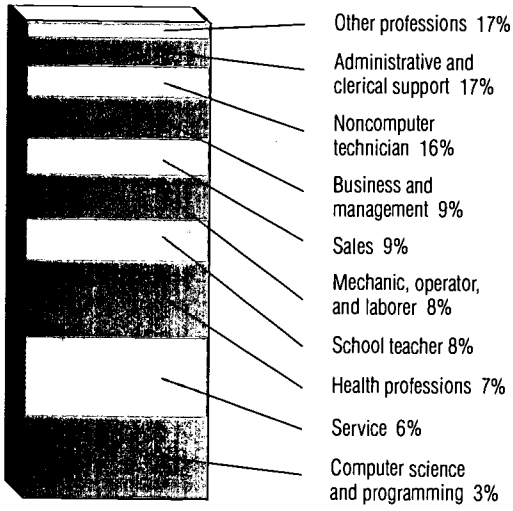


graduation. People are likely to change occupations as they gain experience or additional education.

The results of the survey are based on a nationally representative sample of 10,080 college graduates who received bachelor's degrees between July 1992 and June 1993. Data were collected by a Computer Assisted Telephone Interview (CATI) survey, as well as field interviewing when necessary, between June and October 1994. This sample represents about 1 percent of all bachelor's degree recipients during the same period. The results of a survey covering all graduates might differ.

The following charts profile the 11 major fields for which the survey yielded reliable data. For each field, the charts show the major occupations of the graduates, and the text provides additional information on employment, unemployment, school enrollment, career potential, and earnings.

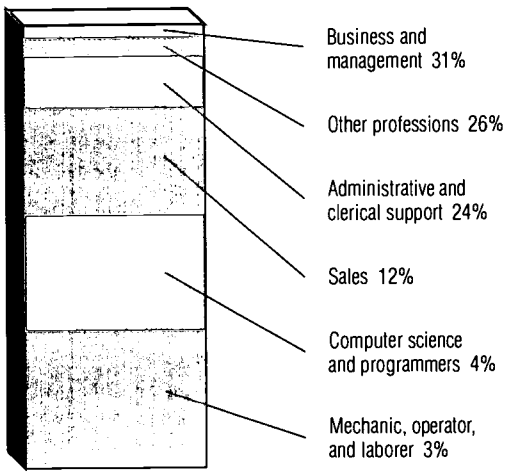
Where is the class of '93?



Biological Sciences

The biological sciences include majors in zoology, botany, biochemistry, and biophysics. This field had the lowest percentage of graduates employed 1 year after graduation (69 percent). Of those employed, 52 percent worked full time and 17 percent worked part time. Biological sciences majors also had the highest proportion unemployed (almost 10 percent) among all graduates. But many professional jobs in biological sciences require an advanced degree, and the 35 percent of biological sciences majors enrolled in continuing education 1 year after graduation is the largest proportion of any field surveyed.

About 64 percent reported that their jobs were related to biological sciences; about half (49 percent) reported that a 4-year degree was required for their job; and 57 percent said their jobs had career potential. The largest percentage of biological sciences graduates held jobs in other professions, including scientists (17 percent) and administrative and clerical support (17 percent) and noncomputer technician jobs (16 percent). Job opportunities for bachelor's degree holders include school teacher and health technician. Biological sciences majors employed full time averaged $22,800 a year.



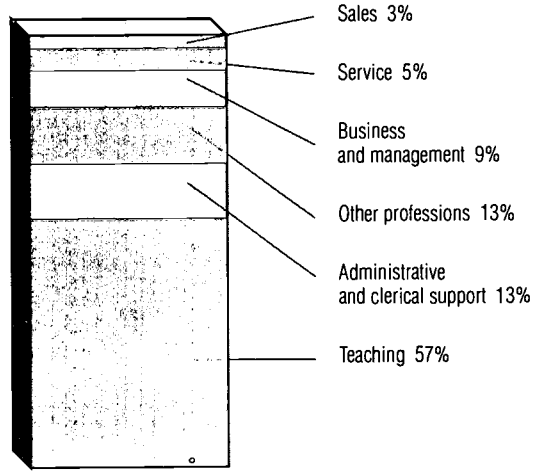
Business and Management

The business and management field had the highest number of graduates employed 1 year after graduation (92 percent). Eighty-five percent were employed full time, and 8 percent were employed part time. About 4 percent of business and management majors were unemployed. Relatively few (10 percent) were enrolled in continuing education.

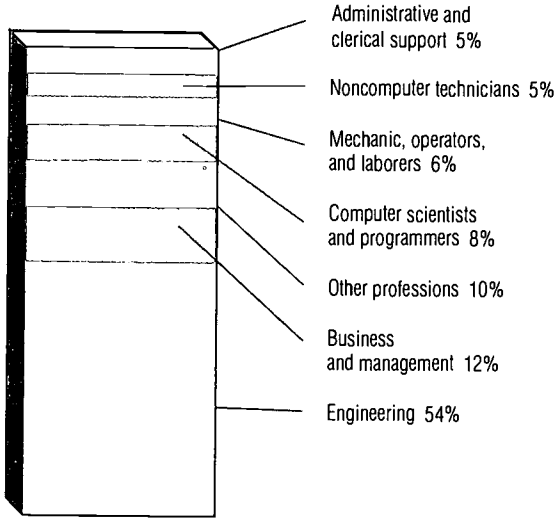
Eighty-five percent of graduates reported holding jobs that were related to business and management; about half (51 percent) said that a 4-year degree was required for their job; and 77 percent said that their jobs had career potential. Over 31 percent of graduates were working in business and management occupations. Other professions, including accounting, employed 26 percent of graduates; another 24 percent worked in administrative and clerical support occupations, including bank teller, bookkeeping, real estate appraiser, and insurance adjuster. Business and management majors working full time averaged $27,100 a year.

Education

Graduates in education had a relatively high labor force participation rate (89 percent) 1 year after graduation, with 68 percent employed full time and 21 percent employed part time. These graduates had the lowest proportion unemployed of all fields (less than 4 percent). Many States require a master's degree for teaching certification. About 19 percent of education graduates were enrolled in continuing education 1 year after graduation.



Nearly 80 percent of graduates reported being in jobs related to education; 66 percent said that a 4-year degree was required for their job; and 75 percent said that their jobs had career potential. The majority of education graduates (57 percent) were employed as school teachers. Some of those were substitute teachers. The next largest category of employment was administrative or clerical support, accounting for 13 percent of graduates. The average annual salary of education majors employed full time was $19,300, the lowest salary of all fields studied; however, most teachers work a 10-month year.



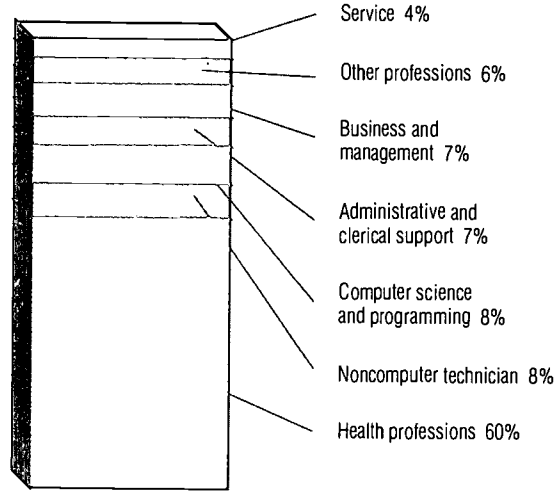
Engineering

Eighty-five percent of engineering graduates were employed 1 year after graduation, 76 percent of them full time and 9 percent part time. Almost 7 percent of engineering graduates were unemployed, more than double the 3 percent for engineering graduates in the class of 1990. A relatively high proportion (21 percent) was enrolled in continuing education 1 year after graduation.

About 87 percent reported that their jobs were related to their major field; 79 percent said a 4-year degree was required for their job; and 82 percent said that their jobs had career potential. Over half of engineering graduates (54 percent) were concentrated in engineering jobs. The proportion of graduates working in other fields ranged from 5 percent in administrative and clerical support to 12 percent in business and management. Engineering graduates employed full time had the second highest salary of all fields studied, $30,900.

Health Professions

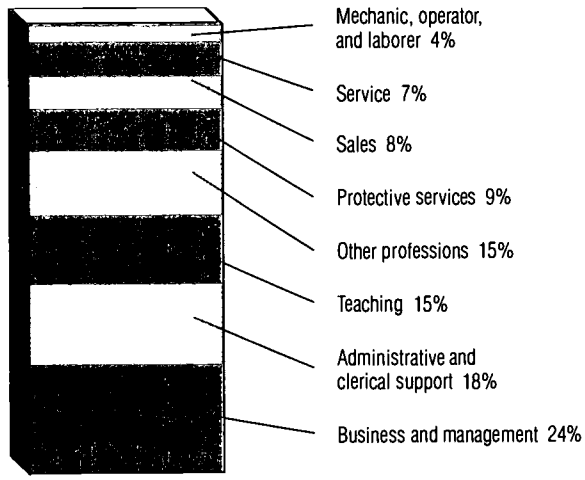
Health professions include allied health, such as dental or medical technician, community or mental health, and nurse assisting; physical education or recreation; and other areas of health, such as audiology, dentistry, medicine, nursing, health or hospital administration, and dietetics. About 89 percent of health professions graduates were employed 1 year after graduation, with 73 percent full time and 15 percent part time. About 5 percent were unemployed.



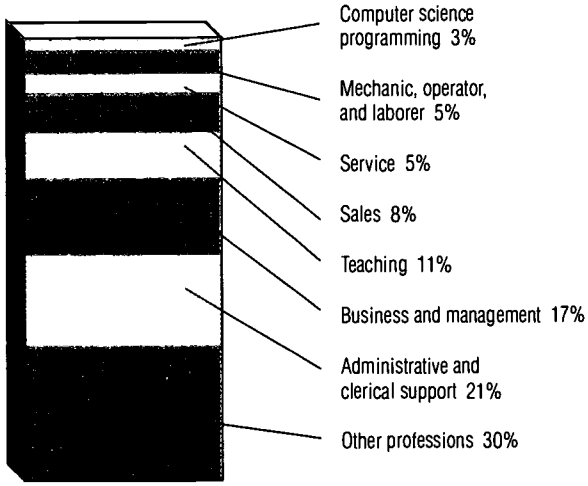
A high proportion of these workers (91 percent) reported that their jobs were related to their major field; 73 percent said a 4-year degree was required for their job; and 80 percent said their jobs had career potential. Seventeen percent of graduates were enrolled in continuing education after graduation. Sixty percent of graduates were employed in health professions 1 year after graduation. About 10 percent were employed as noncomputer technicians, including medical and dental technicians, hygienists, radiology technicians, and clinical lab technicians. Health professions graduates working full time averaged $31,300, the highest of all fields.

History

Eighty-six percent of all history graduates were employed 1 year after graduation, 72 percent of them full time and 14 percent part time. About 5 percent of these graduates were unemployed. Nearly a quarter of history graduates were enrolled in continuing education after graduation. This comparatively large number is not surprising, because an advanced degree is usually required to work in this field.



A relatively low 42 percent of graduates reported having a job related to history. Only 41 percent of graduates reported that a 4-year degree was required for their job, and 67 percent of graduates reported that their jobs had career potential. Jobs of history graduates were widely distributed. Nearly a quarter of graduates held jobs in business and management; the next largest group, 18 percent, had administrative and clerical support jobs; and 15 percent were employed as school teachers, possibly to teach history. History graduates working full time had among the lowest salaries of all fields surveyed, $21,300.

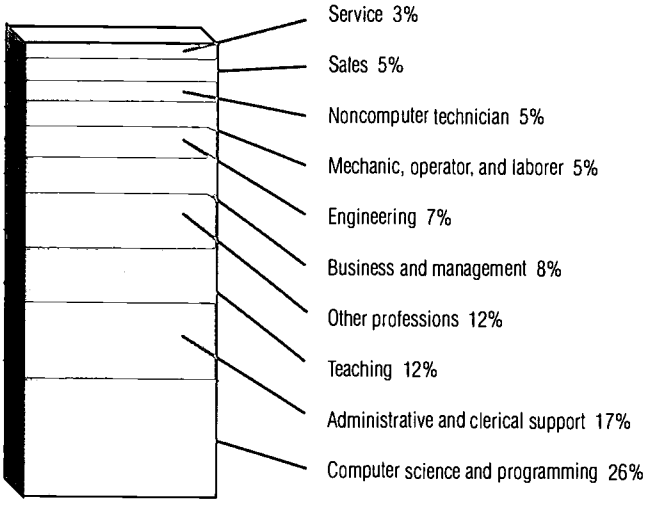


Humanities

The humanities field includes foreign languages, philosophy, theology, and the arts. Eighty-four percent of humanities majors were employed 1 year after graduation, 64 percent full time and 20 percent part time. Of all fields studied, these graduates had one of the highest percentages of part-time workers (20 percent). Over 5 percent were unemployed. About 19 percent of humanities graduates were enrolled in continuing education 1 year after graduation.

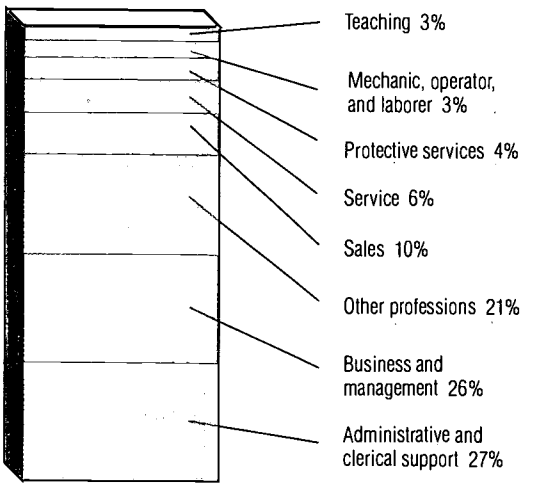
A relatively low 58 percent said they worked in jobs related to their major field; 45 percent reported that a 4-year degree was required for their job; and 66 percent said their jobs had career potential. Jobs for humanities majors were widely dispersed, characteristic of majors that do not provide training for a specific profession. The largest portion (30 percent) worked in other professions, including arts and entertainment, the law, as clergy, and in social work, architecture, and accounting. The average salary of humanities graduates working full time was $19,500.

Mathematics, Computer Sciences, and Physical Sciences



A large proportion of mathematics, computer sciences, and physical sciences graduates (82 percent) was employed 1 year after graduation, 68 percent of them full time and 14 percent part time. The proportion unemployed was nearly 6 percent. Twenty-five percent of mathematics, computer sciences, and physical sciences majors were enrolled in continuing education 1 year after graduation.

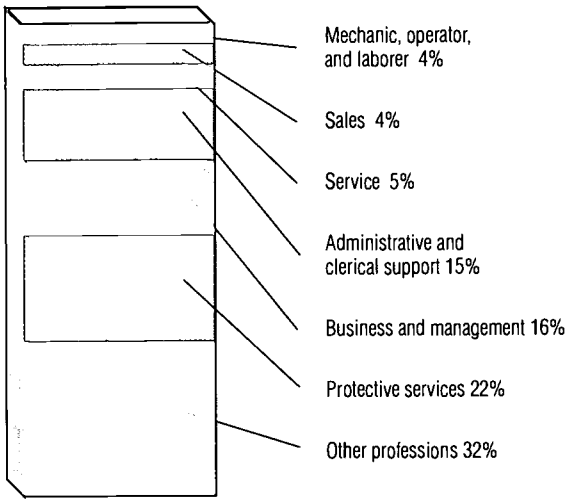
The majority of graduates in these fields (82 percent) reported that their jobs were related to their major; 68 percent said that a 4-year degree was required for their job; and 75 percent said their jobs had career potential. Graduates worked in a wide range of occupations. The largest group, more than a quarter, was employed in computer sciences and programming occupations. The average salary of these graduates working full time was $25,400.



Psychology

Among psychology majors, 81 percent were employed 1 year after graduation, with 67 percent working full time and 15 percent part time; almost 6 percent were unemployed. As expected, psychology had a high rate of graduate school enrollment (28 percent) because a graduate degree is required for most jobs in this field.

A fairly low 57 percent said that their jobs were related to psychology; 45 percent said a 4-year degree was required for their job; and 53 percent said their jobs had career potential. The majority of workers were split between business and management (26 percent); other professions, including social work, clergy, and science (24 percent); and administrative and clerical support occupations (22 percent). The others held service, teaching, health professional, sales, and noncomputer technician jobs. The average salary of psychology graduates working full time was $21,600, the second lowest of all fields studied.



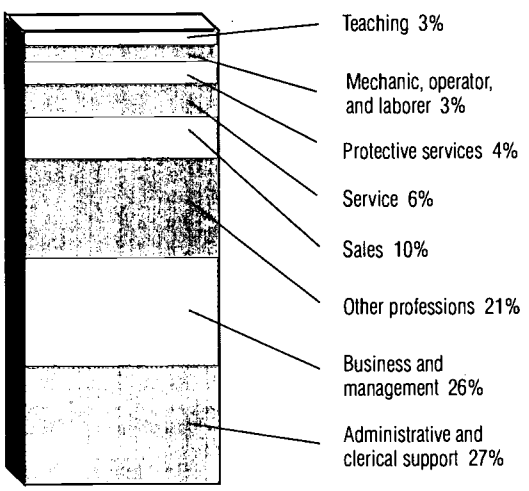
Public Affairs and Social Services

The public affairs and social services field includes protective services, social work, and public administration. About 88 percent of graduates were employed 1 year after graduation, 75 percent full time and 13 percent part time. A relatively low proportion (under 5 percent) was unemployed. Fourteen percent of graduates were enrolled in continuing education 1 year after graduation.

Seventy-two percent reported that their jobs were related to their major field; 49 percent reported that a 4-year degree was required for their job; and 68 percent said their jobs had career potential. Graduates were fairly widely dispersed. The largest portion, 32 percent, had jobs in other professions, including public relations, radio and television announcing, and social work; the second largest, 22 percent, had jobs in protective services; and the third largest, 16 percent, had jobs in business and management. Public affairs and social services graduates working full time averaged $22,000 a year.

Social Sciences

The social sciences field includes anthropology, archaeology, economics, geography, sociology, political science, and international relations. About 86 percent of graduates were employed 1 year after graduation, 73 percent full time and 13 percent part time; 5 percent were unemployed. About 19 percent were enrolled in continuing education 1 year after graduation.



Fifty-seven percent of social science graduates reported that their jobs were related to their major field; 47 percent said that a 4-year degree was required for their job; and 68 percent said their jobs had career potential. The majority of graduates held jobs in administrative and clerical support (27 percent) and business and management occupations (26 percent). The average salary of social science majors working full time was $22,100 a year.

Trends in College Degrees

by Jonathan W. Kelinson

More people this decade than ever before are getting their college degrees. According to the National Center for Education Statistics (NCES), over 1.6 million bachelor's or higher degrees were conferred by the Nation's colleges and universities in academic year 1994-95, the latest year for which data are available. Population growth contributes to the increase, but a comparison of the recent data with those from more than a decade earlier reveals trends in college degrees by educational level and field of study and by college enrollment characteristics.

This article examines trends based on data for bachelor's, master's, first professional, and doctoral degrees awarded between the 1982-83 and 1994-95 academic years, a span of time for which comparable data are available. The first section looks at trends by educational level and field of study, as well as the number of degrees projected to 2005-06. The second section discusses changes based on sex, college enrollment of recent high school graduates, and age and attendance patterns. Where to find related information is noted at the end.

Trends: Past and Projected

Between 1982-83 and 1994-95, the number of degrees granted varied by educational level and field of study. The number awarded in some fields declined or grew little at the bachelor's level but increased at the master's or doctoral level or both; in other fields, the reverse was true. Projections of degree awards also differ by educational level. (See chart.)

Growth by educational level and field of study. Overall, most of the increase in the total number of college degrees conferred during the 1982-83 to 1994-95 period took place from 1987-88 to 1993-94. However, growth differed by educational level. Over the 1982-83 to 1994-95 period, the number of bachelor's degrees granted rose by 20 percent to nearly 1.2 million. The number of master's degrees increased 37 percent, with all of the growth occurring after 1987. The change in doctoral degree awards, though small in number, increased the fastest among the different educational levels—44 percent—primarily during the late 1980s and the mid-1990s. The small number of first professional degrees (dentistry, medicine, and law) increased only slightly, 4 percent, over the period.

Growth in degree awards also varied by field of study at different educational levels. (See table.) Throughout the 1982-83 to 1994-95 period, the Bureau of Labor Statistics (BLS) projected favorable job prospects for occupations requiring a bachelor's or higher degree in technical areas, such as computer science or engineering. Yet most of the bachelor's degree majors increasing their share of the total number of degrees granted between 1982-83 and 1994-95 were in nontechnical areas. This includes fields such as psychology, visual and performing arts, and liberal arts and humanities. The number of degrees in areas considered more vocationally oriented, such as business, increased little over the period. The only technical fields that increased their portion of total number of degrees granted were biological and life sciences and health professions. In engineering and physical sciences, the

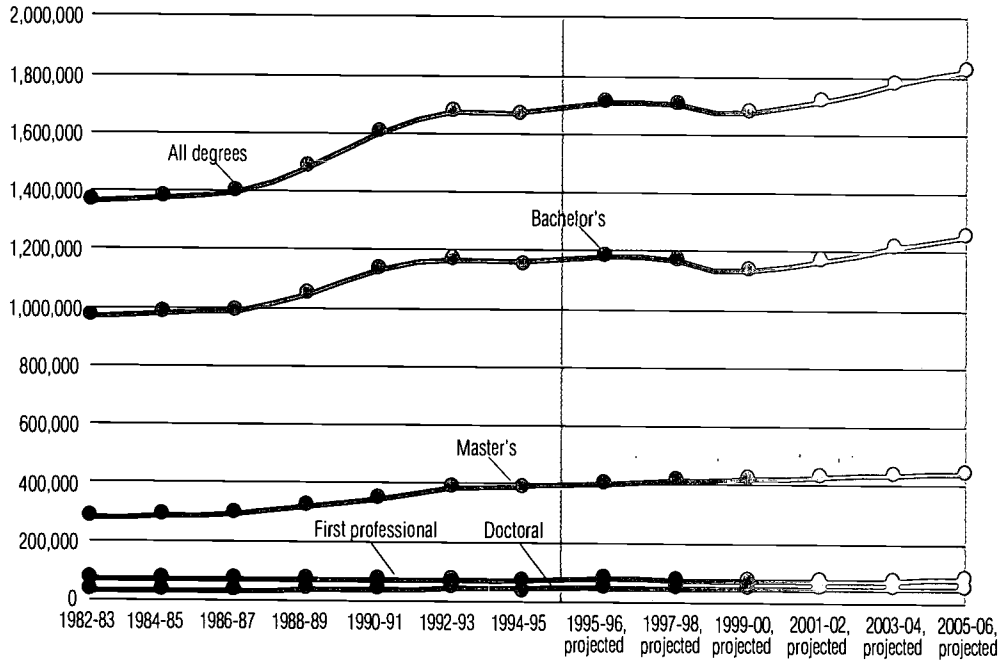
than W. Kelinson is an economist in the Office of Employment ctions, BLS, (202) 606-5688.

number of degrees decreased significantly.

The trends in degree levels for some fields are interesting, especially for those experiencing a growth in employment and favorable projections for future employment. The number of undergraduate degrees in computer-related fields, for example, retreated from 1982-83 to 1994-95. This decrease occurred despite a 3-fold increase between 1982 and 1995 in the number of computer science specialists employed and BLS projections that employment in the field would continue to increase over the next decade. However, the number of master's degrees grew dramatically, nearly doubling from around 5,000 in 1982-83 to more than 10,000 in 1994-95. At the doctoral level, the number more than tripled over the period.

Degrees awarded, all fields of study, 1982-83 t0 1994-95 and 1995-96 to 2005-06, projected

(thousands)



Source: National Center for Education Statistics

Likewise, engineers recorded contrasting trends in degree patterns during the 1982-83 to 1994-95 period. At the undergraduate level, the number of degrees conferred declined nearly 15,000 from its peak of 77,000 in 1984-85. But at the graduate level, the number of engineering degrees increased steadily, especially toward the end of the period, to account for nearly 13,000 new degrees at both the master's and doctoral levels. That growth represents a 50-percent increase in master's degrees, and the doubling of doctoral degrees signals the largest numerical increase at this level for all fields.

There were similar trends in awards of business degrees. The number of bachelor's degrees increased to a peak of nearly 257,000 in 1992-93 but then retreated close to the 1982-83 level. Meanwhile, the number of master's degrees in business—which represent almost a quarter of all master's degrees—increased 45 percent. Doctoral degrees increased fairly steadily over the period.

The number of undergraduate degrees in health professions, s nursing and health services administration, declined slightly between 1982-83 and 1988-89, then increased sharply the last few years. The number of master's degrees in health professions, however, increased 83 percent over the period. First professional degrees conferred in health sciences changed little. Pharmacy experienced the largest increase with 2,000, the same number by which dentistry declined.

These four dynamic fields are examined here because of the wide variation in degree awards over the 1982-83 to 1994-95 period, especially at the undergraduate level in computer science, engineering, and business and at the graduate level in health professions. While there are many possible reasons for these variations, one reason common to all four fields is job market conditions.

Overall, the job market was generally favorable throughout the 1970s for college graduates in technical areas, prompting a disproportionate number of students to major in those fields as undergraduates in hopes of securing good jobs upon graduation. In the early 1980s, however, a technology explosion produced the computer and information technology industries and

increased the demand for workers with computer science and engineering backgrounds. Jobs were available for those able to do the work regardless of whether they had completed a rigorous technical program, so more students may have opted to give up technical training for other majors.

A similar explanation may apply to business majors at the bachelor's degree level, although without the driving force the information technology boom provided for technology graduates. The perceived advantage of having a bachelor's degree in business might have been sustained over a longer period, until the early 1990s. But with the economy expanding strongly since then, graduates in many different fields now qualify for jobs previously requiring business training.

Finally, trends in awards of degrees in health professions may be attributed to changes in the health care industry affecting the job market. The effects of these changes are most notable at the graduate level because of the increased opportunities created for workers with advanced degrees.

Degree projections. NCES projections of earned degrees between 1995-96 and 2005-06 show relatively little change over present levels. The number of bachelor's degrees is expected to dip slightly in the next few years, then increase gradually. The number of master's degrees is expected to increase modestly over the period, while the number of doctoral and first professional degrees will remain about the same.

Graduate Characteristics

In addition to showing trends by degree level and field between 1982-83 and 1994-95, NCES data also reveal trends by student characteristic. Noteworthy characteristics for trend analysis are those of sex, length of time between high school graduation and college enrollment, and age and attendance patterns. These factors suggest a move away from previous college enrollment trends, contributing to more students earning a greater number of degrees.

Women graduates. The increases in the number of degrees granted between 1982-83 and 1994-95 are markedly different for men and women. During this period, the total number of degrees earned by women grew 35 percent, compared to a 12-percent increase for men. In 1987-88, women received more degrees than men for the first time—695,636 compared to 690,465, a difference of over 5,000. By 1994-95, women earned 122,000 more degrees than men. At the start of the period, the number of both bachelor's and master's degrees awarded to men and women were about equal. But by 1994-95, women earned about 55 percent of both bachelor's and master's degrees, compared to 45 percent for men.

Overall, the number of first professional degrees increased only 4 percent between 1982-83 and 1994-95. But the number of those degrees earned by women increased 42 percent while decreasing 12 percent for men. Women received 40 percent of all professional degrees in 1994-95, compared to 30 percent at the beginning of the period.

At the doctoral level, the number and share of degrees earned by women also increased. In 1994-95, women's share of doctoral degrees, less than 40 percent, was slightly lower than the proportion earning first professional degrees.

Recent high school graduates. The increase in the proportion of recent high school graduates attending college is another reason the number of degrees conferred expanded between 1982-83 and 1994-95. NCES data show that, a decade after finishing high school, students who enrolled in college immediately afterward were more likely to earn a bachelor's degree than were those who delayed entry. In 1982-83, 51 percent of high school graduates entered a higher education program within 1 year of graduation. And by 1994-95, this rate increased to 62 percent.

Older and part-time students. Another factor expanding the number of college students working toward a degree was a growth in the numbers of students who did not fall within the traditional college age and who did not attend college full time. Traditionally aged college students, those between the ages of 18 and 24, made up the majority of students on college campuses. But the number of older students increased significantly. For example, in 1985, 15 percent of those attending an institution of higher education were older than 35; this proportion had increased to 21 percent by 1994.

The number of students enrolling in degree programs part-time stayed at consistently high levels between 1982-83 and 1994-95. In 1982, a large proportion of students—42 percent—enrolled on a part-time basis; by 1994, that share had risen slightly, to 43 percent.

Related Information

Other articles in this issue of the Quarterly focus on certain aspects of college degrees. In addition, BLS and NCES resources provide more details. Information about degrees awarded by detailed field of study for 1994-95 is available in *Occupational Projections and Training Data*, 1998 Edition (BLS Bulletin 2501). Completions data and information about changes in the characteristics of college students is available at the NCES Web site: **www.ed.gov/NCES/**.

College degrees awarded, selected years 1982-83 to 1994-95, and percent change, 1982-83 to 1994-95

(numbers in thousands)

Field of study and degree [1]	1982-83	1984-85	1986-87	1988-89	1990-91	1992-93	1994-95	Percent change, 1982-83 to 1994-95
Total, all fields	1,366	1,374	1,387	1,437	1,544	1,653	1,681	23
Bachelor's degrees	970	979	991	1,019	1,095	1,165	1,160	20
Agricultural resources	21	18	15	13	18	17	20	-4
Architecture	10	9	9	9	10	9	9	-10
Biological/life sciences	40	38	38	36	40	47	56	40
Business	227	233	241	246	249	257	234	3
Communications	37	40	44	47	52	54	48	30
Computer and information science	25	39	40	30	25	24	24	–
Education	98	88	87	97	111	108	106	8
Engineering	72	77	74	66	62	62	62	-13
Engineering technologies	17	18	19	19	17	16	16	-5
English language and literature/letters	32	33	36	42	52	56	52	63
Foreign languages	11	38	11	12	13	14	14	30
Health professions	65	64	63	59	59	67	80	23
Home/vocational economics	16	15	14	14	15	15	15	-5
Liberal arts and humanities	22	22	24	26	31	33	33	54
Mathematics	13	16	17	16	15	15	14	8
Multidisciplinary/ interdisciplinary studies	14	13	14	15	18	24	26	85
Park, recreation, leisure, and fitness studies	5	5	4	4	4	10	13	147
Philosophy and religion	2	6	6	6	7	8	7	12
Physical sciences and technologies	23	24	20	17	16	18	19	-17
Protective services	13	13	12	15	17	21	24	92
Psychology	40	40	43	49	59	67	72	78
Public administration	14	12	12	13	14	17	19	29
Social sciences and history	95	92	96	108	125	136	128	35
Theology studies and religious vocations	6	6	6	5	5	5	6	-7
Visual and performing arts	40	38	37	38	42	48	49	22
Master's degrees	290	286	289	311	337	370	398	37
Agricultural resources	4	4	4	3	3	4	4	–
Architecture	3	3	3	3	3	4	4	17
Biological/life sciences	6	5	5	5	5	5	5	-4
Business	65	67	67	73	78	90	94	45
Communications	4	3	4	4	4	5	5	47
Computer and information science	5	7	8	9	9	10	10	94
Education	83	75	74	81	87	96	101	22
Engineering	18	21	22	24	24	28	29	52
Engineering technologies	1	1	1	1	1	1	1	108
English language and literature/letters	5	5	5	6	7	8	8	55
Foreign languages	2	2	2	3	3	3	3	27
Health professions	17	17	18	19	21	26	31	83
Home/vocational economics	2	2	2	3	3	3	3	20
Liberal arts and humanities	1	1	2	2	2	3	3	99
Mathematics	4	3	4	4	4	4	4	23
Multidisciplinary/ interdisciplinary studies	2	3	2	3	2	2	2	–
Park, recreation, leisure, and fitness studies	1	1	1	1	–	1	2	189
Philosophy and religion	1	1	1	1	1	1	1	26

Continued

College degrees awarded, selected years 1982-83 to 1994-95, and percent change, 1982-83 to 1994-95

(numbers in thousands)

Field of study and degree [1]	1982-83	1984-85	1986-87	1988-89	1990-91	1992-93	1994-95	Percent change, 1982-83 to 1994-95
Physical sciences and technologies	5	6	6	6	5	5	6	9
Protective services	1	1	1	1	1	1	2	31
Psychology	10	10	10	10	11	11	14	39
Public administration	16	16	16	17	18	20	24	46
Social sciences and history	11	11	11	11	12	13	15	32
Theology studies and religious vocations	5	4	5	5	5	5	5	8
Visual and performing arts	9	9	9	8	9	9	10	17
Doctoral degrees	33	34	34	37	40	43	47	44
Agricultural resources	1	1	1	1	1	1	1	10
Biological/life sciences	3	3	3	4	4	4	5	39
Business	1	1	1	1	1	1	1	80
Education	7	7	6	6	6	7	7	-1
Engineering	3	3	4	5	5	6	6	117
English language and literature/ letters	1	1	1	1	1	1	2	58
Foreign languages	1	1	1	1	1	1	1	34
Health professions	1	1	1	1	2	2	2	79
Mathematics	1	1	1	1	1	1	1	68
Physical sciences and technologies	3	3	4	4	4	4	4	37
Psychology	4	3	4	4	4	4	4	6
Social sciences and history	3	3	3	3	3	3	4	27
Theology studies and religious vocations	1	1	1	1	1	1	2	32
First professional [2]	73	75	72	71	72	75	76	4
Total, health sciences	30	30	29	29	28	29	30	2
Chiropractic	3	3	2	3	3	3	3	3
Dentistry	6	5	5	4	4	4	4	-30
Medicine	15	16	15	15	15	16	16	–
Optometry	1	1	1	1	1	1	1	6
Osteopathic	1	1	2	2	1	2	2	41
Pharmacy	1	1	1	1	1	2	2	221
Podiatry	1	1	1	1	1	–	1	-14
Veterinary	2	2	2	2	2	2	2	4
Law	37	37	36	36	38	40	39	7
Theology	6	7	7	6	6	5	6	-8

[1] Information on fields of study with fewer than 5,000 degrees conferred in 1982-83 are not shown separately, but are included in the total for all fields. For doctoral degrees, information is not shown separately if fewer than 500 degrees were conferred.

[2] First professional degrees are the required minimum qualification for entry into some fields. As a result, information for these degrees is included separately from the other degree levels.

— = Fewer than 500 degrees or less than 0.5 percent.

Source: National Center for Education Statistics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Earnings of College Graduates in 1996

by Theresa Cosca

You've heard that college graduates benefit financially from extra years of schooling. But how can you be sure an investment in education will pay off? Unfortunately, there are no guarantees because no one knows what the future will bring. Studying data from the recent past can offer some clues, however.

Data from a 1997 Current Population Survey (CPS) show that most 1996 college graduates were employed in higher paying managerial, professional specialty, and high-level sales jobs. These data support the notion that as education increases, so does the likelihood of higher earnings. This article analyzes the median earnings for 1996 college graduates, the kinds of jobs they held, and the proportion of college graduates who earned less than the median for high school graduates.

College Graduate Earnings

One point about college graduate earnings is clear: On average, workers with a bachelor's, master's, doctoral, or professional degree have higher median incomes and lower unemployment rates than do workers with less education. According to the March 1997 CPS data, median earnings for all college graduates were $40,753 in 1996. This was nearly 75 percent more than the $23,317 median for all high school graduates. The college graduate unemployment rate was 2.4 percent, less than half the 5.7-percent rate for high school graduates.

Education level. One measure of the benefit conferred by higher education is the percent difference in earnings between the median earnings for high school graduates and college graduates, known as the "premium." While the premium for all college graduates averaged 75 percent, it increased with education, as shown in the following tabulation of the median annual earnings of year-round, full-time workers by education level in 1996:

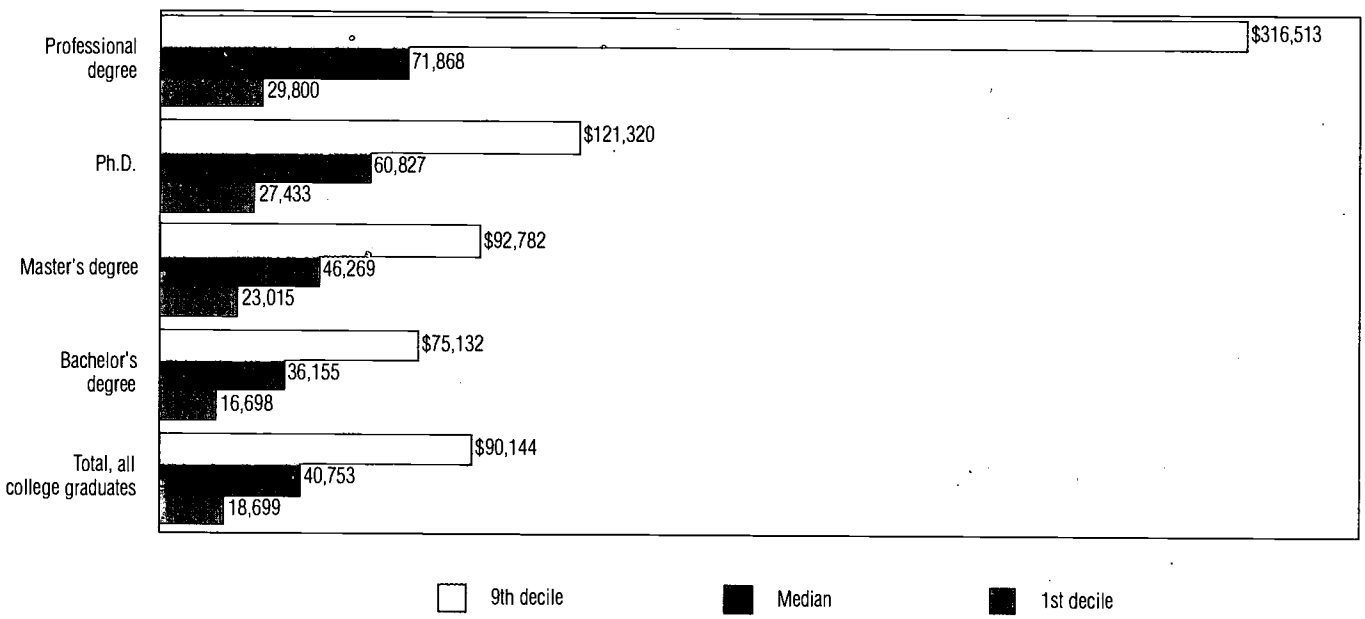
Education level	Median annual earnings	Premium over high school graduates (Percent)	(Dollars)
Professional	$71,868	208	$48,551
Ph.D.	60,827	161	37,510
Master's	46,269	98	22,952
Bachelor's	36,155	55	12,838
High school	23,317	—	—

Medians are a good indicator of what a typical worker might expect in the labor market. However, medians do not tell the whole story. Chart 1 presents the variation in earnings

Theresa Cosca is an economist in the Office of Employment Projections, BLS, (202) 606-5712.

Chart 1

Distribution of earnings for college graduates who worked full time, year-round, by degree level, 1996



by education level between the top and bottom 10 percent of workers, where 80 percent of workers fall. The top 10 percent of all college graduates earned more than $90,144 in 1996. The top 10 percent of workers with a professional degree earned over three times that amount, $316,513. Of these very high earners with professional degrees, most were physicians, lawyers, or high-level executives who have years of education beyond high school. Yet the bottom 10 percent of this highly educated segment of the work force earned less than $29,800, just above the median for all workers ($27,320).

For the remaining education levels, the top 10 percent earned about four times more than the bottom 10 percent. Although median earnings for bachelor's degree holders were $36,155, the bottom 10 percent earned less than $16,698, well below the median for high school graduates ($23,317).

Major occupational group. The typical bachelor's degree holder had median earnings of $36,155, but earnings varied by major occupational group. Chart 2 shows median earnings for nine occupational groups; median earnings in four of those groups were higher than those for all bachelor's degree holders. Top earners in the group with the highest paid workers, executive and managerial occupations, made $95,450. Workers in nonretail sales occupations—a group that includes finance and business services sales representatives—were close behind, with the top 10 percent in that group earning more than $91,538.

However, high earnings did not accrue to all workers in a highly paid occupational group. For example, 10 percent of executives and managers earned less than $21,598. The variation was less pronounced for some other occupational groups. For example, earnings for the middle 80 percent of workers in administrative support occupations differed by $35,109, compared to $73,852 for executive and managerial occupations. Within the major occupational groups, the top 10 percent earned anywhere from three to six times more than the bottom 10 percent.

Earnings were highest for workers in college-level jobs.

BLS considers workers to be in college-level jobs if they have college degrees and their jobs are in the professional specialty, executive and managerial, or technician occupational groups. A college degree is not required for a job in some other occupations, such as retail sales; services, except police and detectives; agriculture, except farm managers; and craft, operator, and laborer positions, except blue-collar worker supervisors. Regardless of their level of education, workers in these groups are assumed to be in jobs that do not require a college degree, and they tended to have lower earnings.

For workers in other occupational groups, however, educational requirements are less clear. Workers who need a college degree to perform their jobs are considered to be in college-level jobs, while those who could perform their jobs without a degree are classified as having noncollege-level jobs. Among the occupations in these groups are police and detectives, blue-collar worker supervisors, and a number of administrative support workers, such as secretaries and bookkeeping and accounting clerks. Earnings for workers in these occupations vary greatly because of their diverse educational backgrounds.

Age. Median earnings usually increase with age, as workers amass experience that makes them more valuable to employers. (See chart 3.) In 1996, bachelor's degree holders aged 50 to 59 earned a median of $18,000 more than did those aged 20 to 24. Median earnings declined after age 59, as many well-

Chart 2

Distribution of earnings for bachelor's degree holders who worked full time, year-round, by occupational group, 1996

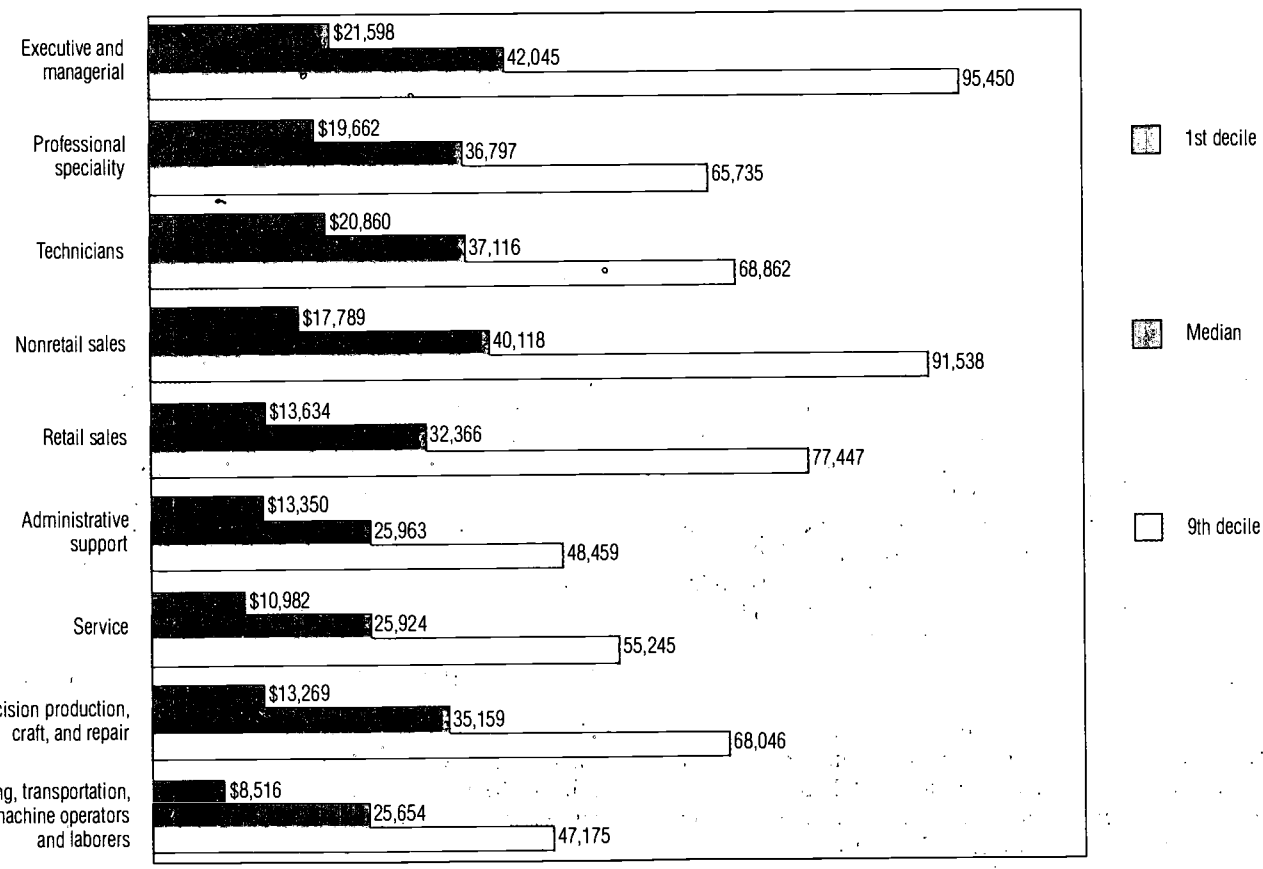


Chart 3

Distribution of earnings for bachelor's degree holders who worked full time, year-round, by age group, 1996

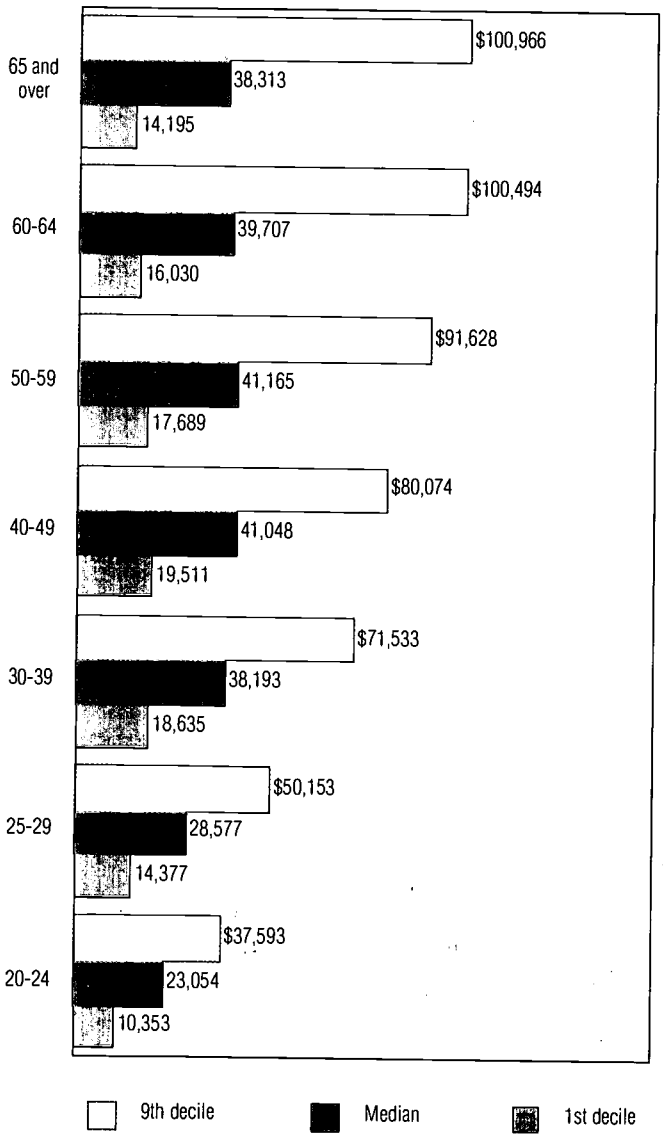
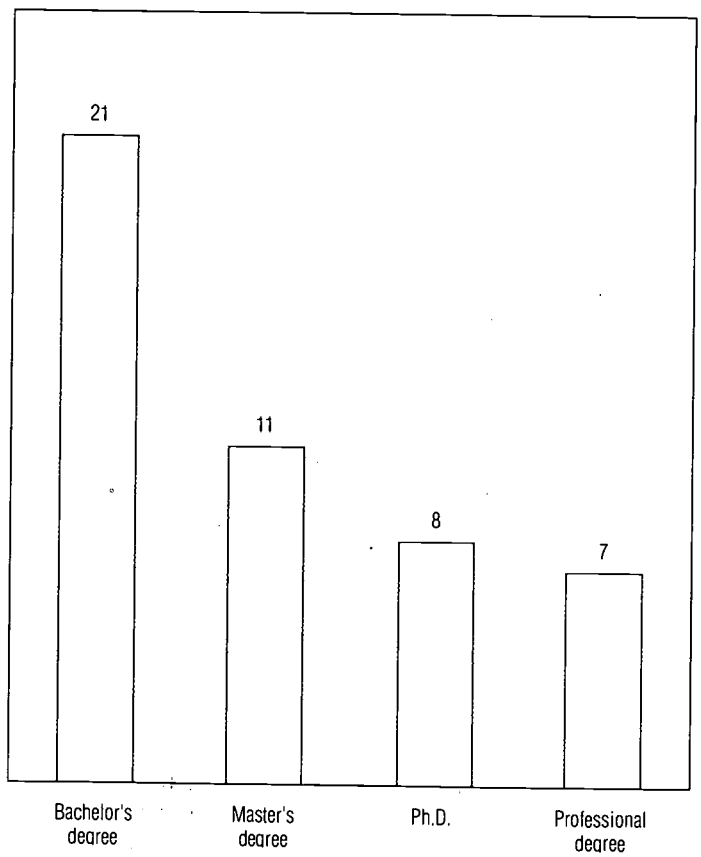


Chart 4

Percent of college graduates working full time, year-round, who earned less than the median for high school graduates ($23,317), by degree level, 1996



paid workers retired. However, some older workers with high earnings defer retirement; the top 10 percent of workers aged 65 and older earned more than $100,966. Young workers aged 20 to 24 had the least variation in their earnings, with the middle 80 percent making between $10,353 and $37,593.

Young workers are more likely to be in low paying, entry-level, or temporary jobs. Earnings of workers in the bottom 10 percent peaked between ages 40 and 49, while those in the top 10 percent rose with age. Bachelor's degree graduates with earnings in the top 10 percent earned more than $80,000 annually after age 40. Those in the bottom 10 percent in each age group earned no more than $19,511.

College Graduates Earning Less Than High School Graduates

Another way to characterize college graduate earnings is to compare them to those of high school graduates. In 1996, about 17 percent of college graduates earned less than the median for high school graduates. One-quarter of college graduates earned less than the median for all workers. The proportion remains significant even if workers under age 30, who are more likely to be in low paying, entry-level, or temporary jobs, are excluded. About 14 percent of the college graduates aged 30 and over earned less than the median for high school graduates.

Workers with the most education were least likely to have lower earnings. (See chart 4.) The percentage of workers earning less than $23,317 dropped steadily from 21 percent for bachelor's degree holders to 7 percent for workers with a professional degree. Some high-wage occupations are difficult or impossible to enter without higher education. And within occupations, workers with the most education usually have the highest paying jobs.

In some occupational groups—such as service, farming, transportation, machine operators and laborers, and administrative support—more than 40 percent of workers with a bachelor's degree earned less than the median for high school graduates. (See chart 5.) Only 13 to 14 percent of workers employed in executive and managerial or technical occupations were likely to have lower earnings.

As you might expect, low earnings are most common among younger graduates. Over one-half of young bachelor's degree holders aged 20 to 24 earned less than the median for high school graduates. (See chart 6.) But large numbers of older college graduates also have earnings below the median for high school graduates. There are two reasons for this. One is that workers in the oldest age group may retire but continue working in lower paying jobs to supplement their retirement incomes. The other reason is that higher earning bachelor's degree holders may retire earlier, leaving the relatively lower earners—those who can't afford to retire—in the older age groups.

Detailed Occupations

Earnings often vary by occupation without regard to the education of the worker. The table presents median annual earnings, ranked from highest to lowest, by education level for occupations with at least 100,000 college graduates in 1996. For workers in almost all of the occupations listed, investing in a college degree pays off. Most of the highest paid workers were employed in college-level professional and managerial occupations. Only 4 of the first 30 occupations listed were not in the professional specialty or executive and managerial occupational groups: production supervisors, securities and financial services sales occupations, police and detectives, and computer programmers.

In all but 9 of the 78 occupations listed in the table, median earnings for college graduates were higher than the overall median for all high school graduates. All of the lowest paying occupations were in one of three major occupational groups: administrative support, service, or farming, transportation, and machine operators and laborers.

Only a few high school graduates earned more than the median for all bachelor's degree holders. They were employed in occupations that most often require a college degree, including marketing, advertising and public relations managers, and computer systems analysts and scientists. And although earnings usually increase with education, in a small number of noncollege-level occupations—such as mail and message distributing occupations—more education added little earnings potential.

Beyond the Data

Data in this article are from the March 1997 supplement to the Current Population Survey that collected information on earnings of all workers by education level. In this survey, employed respondents were asked to report their annual earnings, before deductions, for the previous year. The analysis presented here is limited to year-round, full-time workers so the effect of variable schedules on annual earnings does not cloud comparison of earnings. About 3 out of 5 earners aged 16 and older worked year-round, full-time in 1996. However, less than half of the workers in some occupations—such as prekindergarten and kindergarten teachers, retail sales workers, teacher aides, and waiters and waitresses—worked year-round, full-time. Most voluntarily chose to forgo year-round, full-time employment for noneconomic reasons, such as to attend school or fulfill personal or family obligations.

Chart 5

Percent of bachelor's degree holders working full time, year-round, who earned less than the median for high school graduates ($23,317), by occupational group, 1996

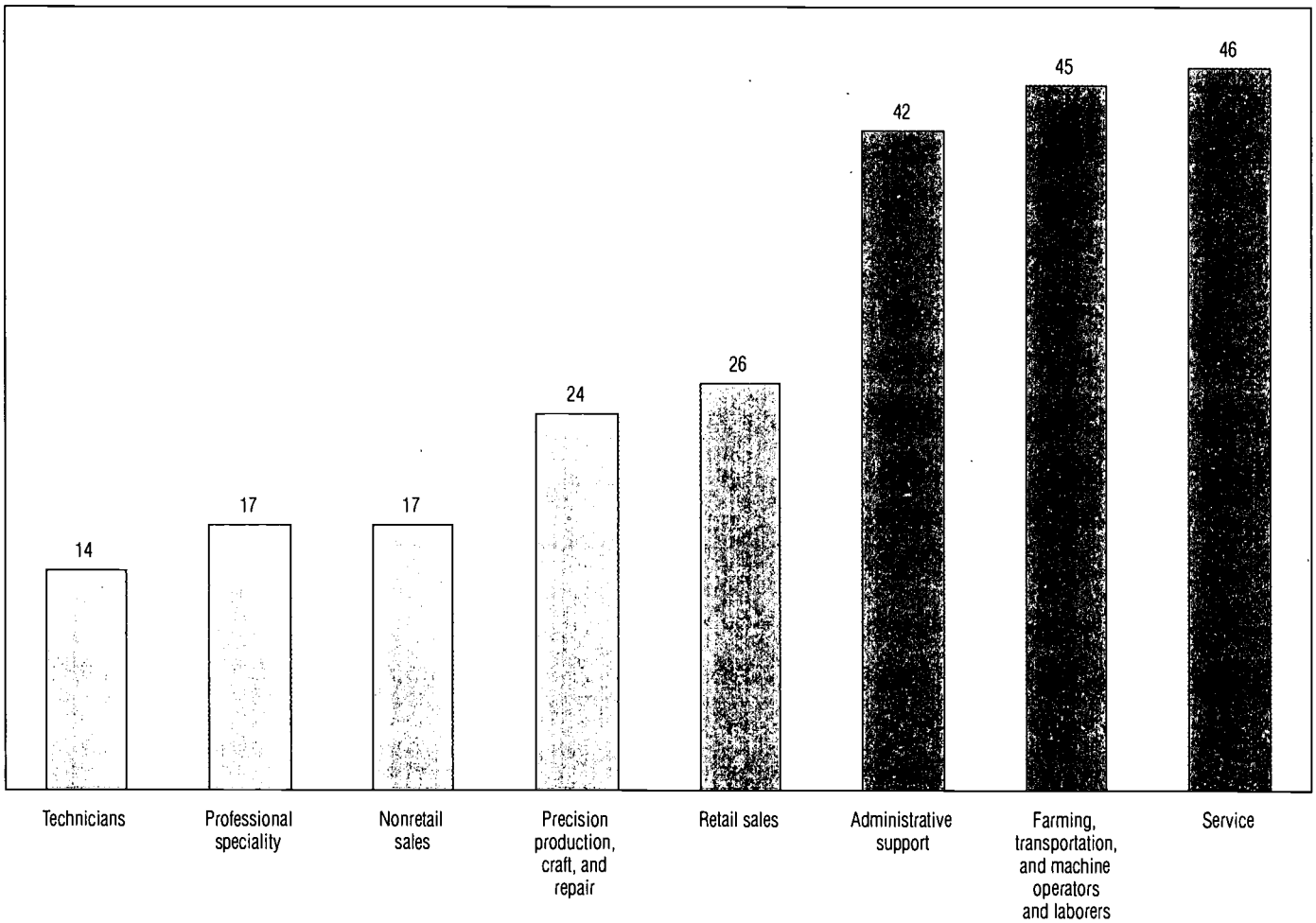
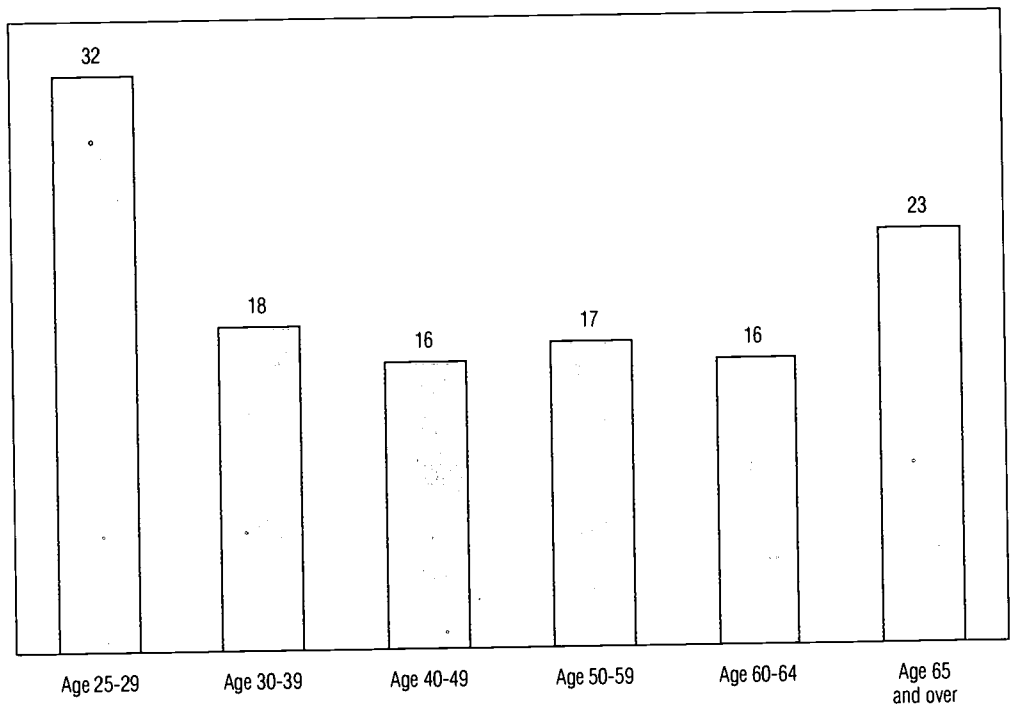


Chart 6

Percent of bachelor's degree holders working full time, year-round, who earned less than the median for high school graduates ($23,317) by age group, 1996



The CPS data paint a detailed picture of the earnings success of college graduates. The diversity of their labor market experiences is sometimes masked by medians and broad occupational groupings. General trends can prove informative but should be interpreted with caution. Because educational attainment is only one of many variables determining occupational earnings, individual experiences can vary greatly. Earnings also reflect workers' innate skills and talents. In addition to the factors discussed in this article, other factors affecting compensation include workers' sex, the industry in which occupations are concentrated, job benefits, geographic location, and union affiliation. For some workers, less tangible aspects of a job—flexible hours or the nature of the work itself, for example—are more important than high earnings.

Employers will continue to demand skilled and capable workers who are the best fit for their organization. Data in this article provide only a snapshot of the dynamic labor market for college graduates. For more information on college graduate outlook, occupations, earnings, and trends, see the summer issue of the *OOQ*. OOQ

Employment and median annual earnings of college and high school graduates who worked full time, year-round, by occupation and degree level, 1996

Occupation	Total employment[1] (thousands)	Median annual earnings				
		All graduates	Bachelor's degree	Master's degree	Ph.D. or professional degree	High school graduates
Total	124,664	$40,753	$36,155	$46,269	$65,890	$23,317
Physicians	676	92,002	—	—	91,791	—
Dentists	127	80,004	—	—	80,004	—
Lawyers	789	76,803	—	—	77,085	—
Marketing, advertising, and public relations managers	667	60,718	54,087	75,619	—	37,078
Production supervisors	1,224	60,662	61,538	—	—	32,010
Managers and administrators, n.e.c.	7,429	60,138	51,234	76,453	80,980	35,421
Securities and financial services sales occupations	427	56,501	50,512	—	—	30,809
Pharmacists	198	56,003	56,010	—	—	—
Economists	178	55,727	50,478	—	—	—
Electrical and electronic engineers	658	55,127	51,312	61,339	—	—
Mechanical engineers	379	53,430	52,954	61,243	—	—
Civil engineers	232	51,514	50,769	52,307	—	—
Operations and systems researchers and analysts	173	51,003	42,276	—	—	—
Management analysts	315	50,245	51,013	46,312	—	—
Computer systems analysts and scientists	1,227	50,187	46,719	52,788	—	42,365
Industrial engineers	241	49,601	46,541	—	—	—
Postsecondary teachers	918	48,263	22,776	41,345	51,973	—
Chemists, except biochemists	130	47,067	43,270	—	—	—
Financial managers	731	47,037	45,635	64,055	—	30,351
Psychologists	246	46,768	—	37,337	63,840	—
Administrators, education and related fields	724	46,514	36,797	50,462	56,019	17,434
Life scientists	209	46,504	35,012	—	56,863	—
Administrators and officials, public administration	551	46,162	44,325	50,402	—	30,199
Other financial officers	744	46,139	41,775	60,748	—	28,551
Physical and occupational therapists	156	45,744	42,186	—	—	—
Police and detectives, public service	528	45,648	41,005	—	—	33,610
Architects	183	45,495	46,255	—	—	—
Computer programmers	606	44,243	39,589	47,367	—	—
Medicine and health services managers	695	43,369	35,785	55,821	—	24,329
Property and real estate managers	521	42,575	41,852	—	—	25,849
Inspectors and compliance officers	251	41,721	42,530	—	—	—
Registered nurses	1,836	41,675	41,018	47,924	—	—
Sales supervisors and proprietors	4,724	40,308	37,407	55,778	—	26,535
Clinical laboratory technologists and technicians	384	40,255	38,983	—	—	22,046
Editors and reporters	254	40,121	37,349	—	—	—
Mining, manufacturing and wholesale sales representatives	1,403	39,600	39,650	—	—	35,521
Personnel, training, and labor relations specialists	430	38,223	36,042	42,328	—	26,112
Mail and message distributing occupations	935	37,286	36,871	—	—	36,077

(continued)

Employment and median annual earnings of college and high school graduates who worked full time, year-round, by occupation and degree level, 1996

Occupation	Total employment[1] (thousands)	Median annual earnings				
		All graduates	Bachelor's degree	Master's degree	Ph.D. or professional degree	High school graduates
General office supervisors	430	$37,047	$35,117	—	—	$26,058
Accountants and auditors	1,525	36,147	35,320	$46,440	—	24,846
Food service and lodging establishment managers	1,332	35,872	37,292	—	—	20,320
Engineering and related technologists and technicians	888	35,652	33,741	—	—	31,105
Construction supervisors	702	35,532	35,444	—	—	32,776
Managers, service organizations, n.e.c.	566	35,396	29,873	43,267	—	26,441
Insurance adjusters, examiners, and investigators	481	35,313	34,593	—	—	25,466
Insurance sales occupations	593	35,001	32,165	—	—	28,175
Special education teachers	407	34,191	26,691	41,530	—	—
Librarians	221	33,760	—	34,573	—	—
Designers	689	33,052	32,615	—	—	20,651
Educational and vocational counselors	255	32,536	28,412	36,511	—	—
Real estate sales occupations	733	32,475	36,831	—	—	30,001
Legal assistants	297	32,472	31,883	—	—	29,376
Secondary school teachers	1,144	32,465	28,737	37,407	$39,270	—
Authors	158	32,299	26,619	—	—	—
Mechanics and repairers, except supervisors	4,392	32,253	33,615	—	—	27,164
Clergy	355	31,322	24,756	35,199	—	—
Elementary school teachers	1,866	31,272	29,405	36,777	—	—
Production occupations, except supervisors	2,566	30,461	30,076	—	—	27,137
Records processing occupations, except financial	945	29,483	28,125	—	—	20,973
Prekindergarten and kindergarten teachers	526	29,422	25,531	33,267	—	12,577
Material recording, scheduling, and distribution clerks, n.e.c.	1,877	29,366	28,813	—	—	22,438
Construction trades, except supervisors	4,487	28,646	28,688	—	—	26,705
Social workers	800	28,277	25,429	35,685	—	23,543
Machine operators, assemblers, and inspectors	7,708	26,832	26,985	—	—	22,951
Farmers, except horticultural	914	26,553	30,422	—	—	21,258
Retail and personal services sales workers	6,662	26,189	24,863	32,330	—	15,921
Painters, sculptors, craft-artists, and artist printmakers	218	23,993	23,928	—	—	—
Investigators and adjusters, except insurance	930	23,792	25,526	—	—	21,480
Bookkeeping, accounting, and auditing clerks	1,704	23,334	23,128	—	—	20,403
Secretaries	2,883	22,805	22,474	—	—	20,946
Truckdrivers	2,940	21,816	22,168	—	—	28,792
Handlers, equipment cleaners, helpers and laborers	4,561	21,795	23,484	—	—	20,912
Data-entry keyers	676	21,778	21,954	—	—	21,114
Guards and police, except public service	730	21,634	22,284	—	—	16,927
Information clerks	1,764	21,412	21,497	—	—	19,244
General office clerks	781	21,153	21,101	—	—	21,800
Waiters and waitresses	1,356	17,773	18,502	—	—	12,984
Teacher aides	665	13,833	13,944	—	—	11,383

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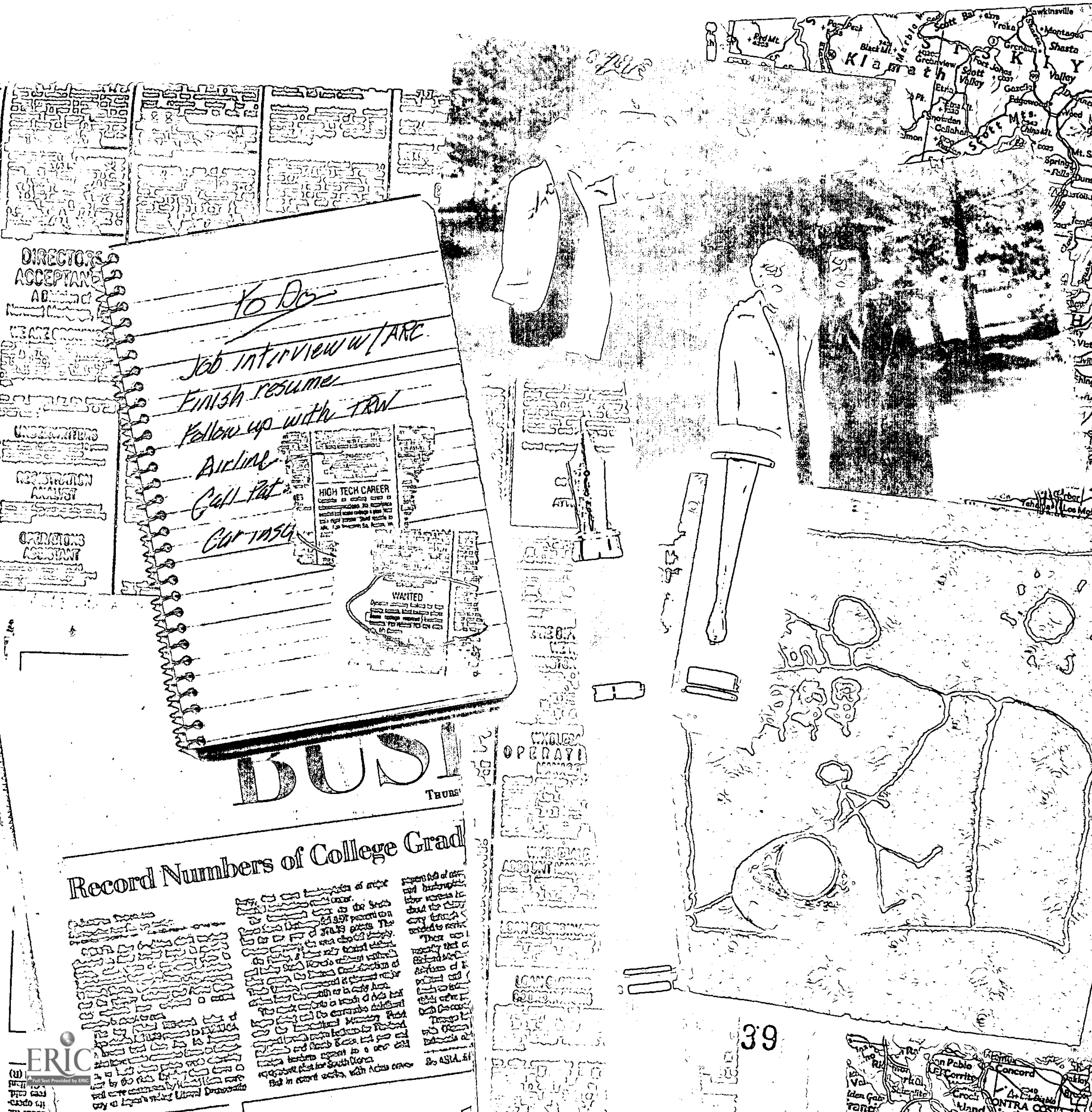
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Occupations and Earnings of Workers With Some College But No Degree

by Daniel Hecker

Workers who have some college education but do not have a degree are more likely than high school graduates but less likely than college graduates to be employed in occupations that usually require a college degree. And they earn more than high school graduates but less than college graduates.

Information about the job market for college graduates is abundant. But little attention is given to another group of workers of nearly equal size—those who have some college education but no degree. A comparison of this group's occupational employment patterns and earnings data with those of workers with a high school diploma and workers with a college degree reveals what you might expect: Some college is better than none, and more is better than less.

In 1996, 17.2 million full-time workers reported having some college but no degree, compared with 17.7 million workers holding a bachelor's degree. These 2 groups, along with 29.1 million workers with a high school diploma and another 7.8 million workers with an associate's degree, accounted for about 81 percent of all full-time workers aged 22 to 64.

This article examines the occupational employment patterns and earnings data for workers with some college but no degree compared to workers who have a high school diploma and those who have associate and bachelor's degrees. (Information on workers who do not have a high school diploma or who hold advanced degrees—master's, doctoral, and first professional—is not presented here.) The first section explains how the data were developed and defines the groups analyzed. The next section compares occupational patterns and earnings.

Data and Definitions

All data in this article are from the 1996 Current Population Survey (CPS) and are for full-time workers aged 22 to 64. The CPS groups workers by level of education and occupation. The Bureau of Labor Statistics (BLS) analyzes the data further, classifying occupations by the level of education and training usually required for entry into each one. Because

Daniel Hecker is an economist in the Office of Employment Projections,)2) 606-5713.

Table 1
Percent of employment, by sex, level of education, and occupational education and training category, 1996

Level of education	All training categories	On-the-job training of up to 1 year	On-the-job training of more than 1 year	Work experience	Postsecondary vocational training	Associate degree	Bachelor's degree or more
Men, aged 22-64							
High school diploma	100	48	24	11	6	1	11
Some college, no degree	100	37	25	8	5	2	24
Associate degree	100	26	22	11	8	6	27
Bachelor's degree	100	16	7	11	3	2	62
Women, aged 22-64							
High school diploma	100	60	6	8	11	2	14
Some college, no degree	100	51	4	7	12	4	22
Associate degree	100	36	3	6	14	20	22
Bachelor's degree	100	21	3	6	5	9	57

occupational patterns and median earnings are different between men and women, data are presented by gender.

CPS Education and Training Categories

The CPS places workers in categories based on their highest level of educational attainment. This article presents data on workers in the following four categories.

Some college, but no degree. Workers with some college but no degree include those who were or still are enrolled in, but have not completed, a bachelor's or associate degree program. This group also includes workers who took or are taking college courses but were never enrolled as degree candidates, as well as workers who have received a certificate of completion for a college program requiring less than the equivalent of 2 years of full-time study. Individuals in this category can have any number of years of college.

High school graduates. This group includes workers who do not have any academic training beyond high school but may have some posthigh school noncollegiate training received in vocational, trade, correspondence, or Armed Forces schools; in apprenticeships; or in formal employer-sponsored training programs.

Associate degree holders. Workers with an associate degree have completed a college program requiring the equivalent of at least 2 years of full-time study after high school.

Bachelor's degree holders. These workers have completed a college program requiring the equivalent of at least 4 or 5 of full-time academic study after high school.

Occupational and Training Categories

The CPS places workers in more than 400 detailed occupations. These occupations are combined to form occupational groups. This article presents data by education level and median weekly earnings for the largest detailed occupations and for occupation groups.

In addition, BLS places each detailed occupation in 1 of 11 categories, condensed here into 6, by the level of education and training usually required for entry. These categories range from occupations that require no more than 4 weeks of on-the-job experience to occupations that usually require a doctoral degree.

Occupations that usually require 1 year or less of on-the-job training. This group includes occupations usually requiring 1 to 12 months of combined on-the-job experience and informal training. Occupations requiring short-term training of a few days to a few weeks are also in this group.

Occupations that usually require long-term on-the-job training. Occupations in this group require more than 12 months of on-the-job training or combined work experience and formal classroom instruction. This category includes craft occupations requiring formal or informal apprenticeships lasting up to 4 years, as well as those jobs where employers provide formal schooling, such as in police and fire academies or in air traffic control or flight attendant school.

Occupations that usually require skills developed through work experience in a related occupation. Occupations in this category require skills and experience gained in other jobs or developed from hobbies, nonwork activities, or service in the Armed Forces. Examples include supervisors, administrative

support occupations; police detectives and investigators; and precision assemblers.

Occupations that usually require completion of vocational training provided in postsecondary vocational schools. This category includes occupations requiring completion of a structured program. Some programs take less than a year to complete and lead to a certificate or diploma. Others last longer than 1 year but less than 4. Occupations in this category include automotive mechanics, licensed practical nurses, and welders and cutters.

Occupations that usually require an associate degree, as described above. Occupations in this category include engineering technologists and technicians, legal assistants, and registered nurses.

Occupations that usually require a bachelor's degree or more education. The largest group in this category includes occupations requiring a bachelor's degree, as defined above. The other groups are occupations usually requiring a bachelor's or higher degree plus work experience; a master's degree, which usually requires 1 or 2 years of full-time study beyond the bachelor's degree; a doctoral degree, which usually requires at least 3 years of full-time study beyond the bachelor's degree; and a first professional degree, which usually requires at least 2 years of full-time academic study beyond the bachelor's degree. Occupations in this category include teachers, engineers, and lawyers.

Note that according to this classification scheme, no occupations were identified in which the usual education or training was some college but no degree. Also, for most occupations, there is more than one way to qualify for a job. Therefore, some workers without a college degree are employed in occupations that usually require one.

Occupations and Earnings Analysis

Workers with some college but no degree have a better chance than workers with a high school diploma of getting jobs that usually require a college degree. However, workers with some college do not fare as well as college graduates in getting those same jobs.

Earnings follow a similar pattern: Overall, workers with some college earn more than high school graduates but less than college graduates.

Employment Patterns

A number of workers with some college were employed in occupational categories usually requiring college-level training. Twenty-four percent of men with some college were in occupations that required a bachelor's degree or education, compared to only 11 percent of high school graduates. (See table 1.) Not surprisingly, so were 27 percent with an associate degree, and 62 percent with a bachelor's degree. For women with some college, 22 percent were in occupations requiring a bachelor's degree or more, compared to 14 percent of high school graduates, 22 percent with an associate degree, and 57 percent with a bachelor's degree.

In 1996, men with some college were most likely to be in the category of managers not elsewhere classified. (See table 2.) These managers held a variety of jobs in industries such as construction, manufacturing, computer services, and repair services.

Compared to men with only a high school diploma, those with some college were more likely to be managers not elsewhere classified, sales supervisors and proprietors, retail sales workers, and sales representatives. However, this group was less likely than the group with a high school diploma to be machine operators, except precision; truckdrivers; automotive mechanics; and carpenters. Compared to men with an associate degree, those with some college were more likely to be managers not elsewhere classified, sales supervisors and proprietors, and truckdrivers but less likely to be engineers, electricians, and electrical and electronic equipment repairers. Compared to men with a bachelor's degree, they were more likely to be machine operators, except precision; truckdrivers; and carpenters but less likely to be managers not elsewhere classified, sales representatives, and engineers.

Women with some college were more likely to be in a secretarial occupation than in any other. (See table 3.) Compared to female high school graduates, women with some college were more likely to be managers not elsewhere classified, accountants, licensed practical nurses, and secretaries but less likely to be in retail sales, cleaning and building service occupations, and assemblers.

Compared to female associate degree holders, women with some college were more likely to be managers not elsewhere classified, bookkeepers, retail sales workers, and nursing aides but less likely to be registered nurses. Compared to women with a bachelor's degree, they were also more likely to be secretaries or bookkeepers but less likely to be managers not elsewhere classified, accountants, registered nurses, and teachers.

Earnings

Most workers with some college but no degree earned more than high school graduates and less than workers with an associate or bachelor's degree in 1996. (See table 4.) This financial return associated with attending college is often described in terms of a wage premium—that is, those with some college or a bachelor's degree command an earnings premium over high school graduates of the same age group and sex. The reduction

Table 2

Percent of full-time employment, by occupation and level of education, men with some college age 22-64, 1996

Occupation	Level of education			
	High school diploma or equivalent	Some college, no degree	Associate degree	Bachelor's degree
Managers and administrators, n.e.c.	5.5	9.0	8.0	13.7
Supervisors and proprietors, sales occupations	4.0	6.1	4.4	6.1
Machine operators and tenders, except precision	8.2	4.1	3.3	1.0
Truckdrivers	6.6	3.7	2.5	.7
Sales workers, retail and personal services	2.6	3.3	2.5	2.5
Sales representatives, mining, manufacturing and wholesale	1.2	2.3	1.8	3.8
Sales representatives, finance and business services	.9	2.2	2.2	5.4
Material recording, scheduling, and distribution clerks, n.e.c.	2.4	2.2	1.7	.8
Supervisors, production occupations	2.5	2.1	1.8	.9
Miscellaneous mechanics and repairers	2.0	1.9	2.0	.4
Engineers	.6	1.8	3.7	8.3
Managers, food serving and lodging establishments	1.0	1.7	1.3	1.3
Precision metal working occupations	2.2	1.7	2.0	.1
Janitors and cleaners	2.6	1.6	.9	.4
Carpenters	2.7	1.6	1.2	.4
Writers, artists, entertainers, and athletes	.5	1.5	1.9	2.9
Police and detectives, public service	.7	1.5	1.8	1.1
Electrical and electronic equipment repairers	1.1	1.5	2.4	.6
Electricians	1.7	1.5	2.5	.2
Supervisors, construction occupations	1.5	1.3	.9	.5
Laborers, except construction	2.4	1.3	.7	.3
Mathematical and computer scientists	.3	1.2	1.8	4.0
Engineering technologists and technicians	.6	1.2	3.1	.7
Automobile mechanics	2.0	1.2	2.0	.2
Plumbers, pipefitters, and steamfitters	1.3	1.1	1.1	.1
Assemblers	1.8	1.1	.9	.3
Cooks	1.3	1.0	.9	.3
Industrial machinery repairers	1.4	1.0	1.0	.1
Guards and police, except public service	.9	.9	.9	.4
Machinists	1.3	.9	1.0	–
Computer programmers	.2	.8	.9	1.5
Firefighting occupations	.3	.8	.7	.2
Farm operators and managers	1.3	.8	1.0	.7
Welders and cutters	1.6	.8	.9	.1
Health technologists and technicians	.3	.7	1.4	.6
Sales occupations, other business services	.3	.7	.6	1.2
Mail carriers, postal service	.5	.7	.5	.2
Traffic, shipping, and receiving clerks	1.1	.7	.5	.2
Production inspectors, checkers, and examiners	.6	.7	.4	.2
Construction laborers	1.4	.7	.3	.2
Managers, marketing, advertising, and public relations	.2	.6	.8	1.8
Social, recreation, and religious workers	.2	.6	.5	1.6
Insurance sales occupations	.3	.6	.5	1.5
Correctional institution officers	.5	.6	.6	.1
Groundskeepers and gardeners, except farm	1.1	.6	.3	.3
Bus, truck, and stationary engine mechanics	.9	.6	.8	–
Heating, air conditioning, and refrigeration mechanics	.7	.6	1.0	.1
Industrial truck and tractor equipment operators	1.3	.6	.3	.1
Drafting occupations	.2	.5	1.1	.2
Real estate sales occupations	.2	.5	.5	1.0
Computer operators	.2	.5	.5	.2
Investigators and adjusters, except insurance	.2	.5	.6	.6
Nursing aides, orderlies, and attendants	.4	.5	.4	.1
Supervisors, mechanics and repairers	.5	.5	.7	.1
Painters, construction and maintenance	.8	.5	.3	.2
Power plant, water and other system operators	.7	.5	.5	.2
Busdrivers	.4	.5	.4	.1

n.e.c. = not elsewhere classified

— = Less than 50,000

SOURCE: Current Population Survey

Table 3

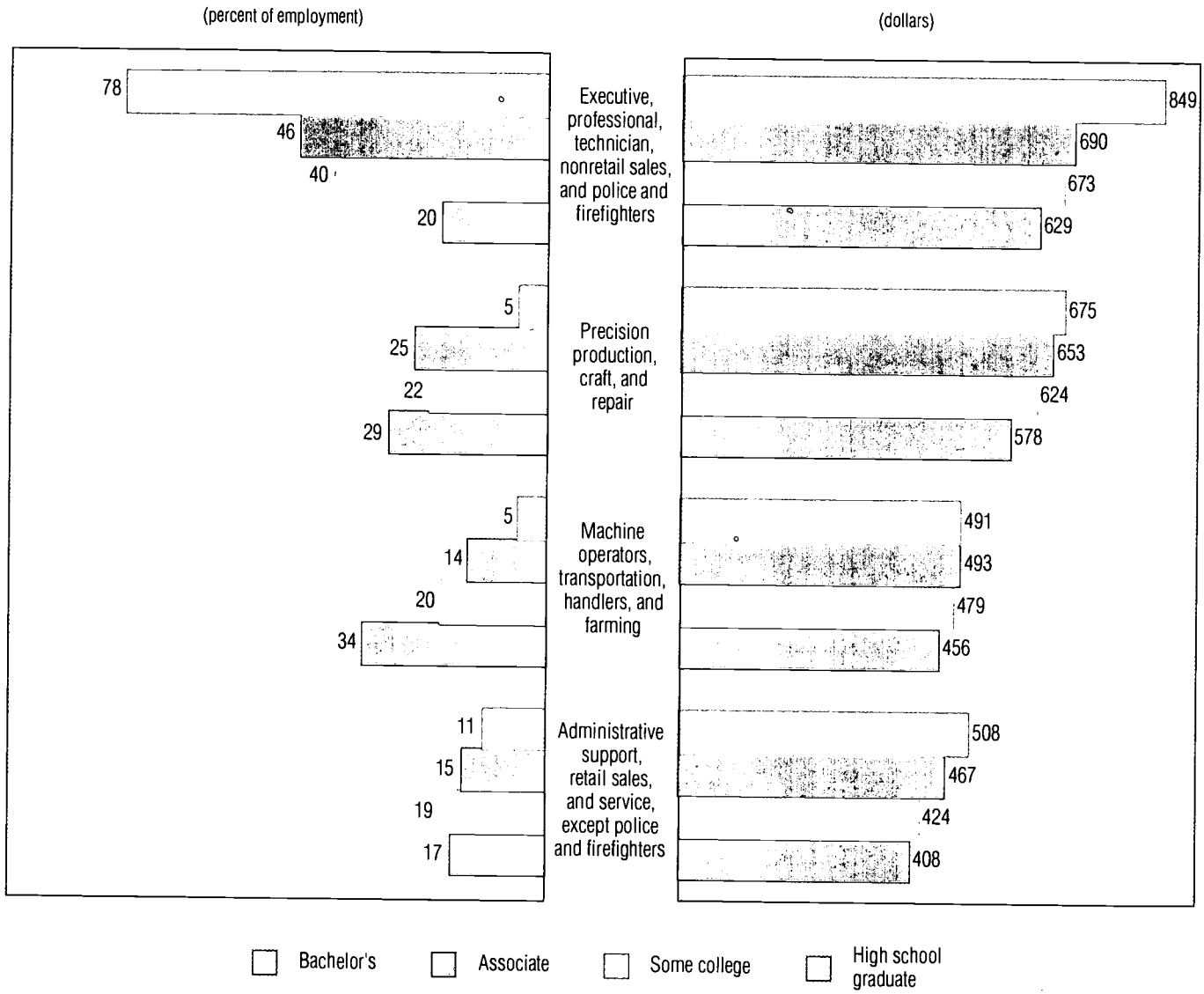
Percent of full-time employment, by occupation and level of education, women with some college age 22-64, 1996

Occupation	Level of education			
	High school diploma or equivalent	Some college, no degree	Associate degree	Bachelor's degree
Secretaries	7.9	9.2	8.4	2.7
Managers and administrators, n.e.c.	3.5	5.3	4.1	6.4
Bookkeepers, accounting, and auditing clerks	3.4	4.0	2.9	1.3
Supervisors and proprietors, sales occupations	3.9	3.9	3.4	3.3
Sales workers, retail and personal services	5.5	3.6	2.4	1.9
Nursing aides, orderlies, and attendants	3.9	3.3	1.8	.4
Health technologists and technicians	1.5	3.1	6.7	1.9
Material recording, scheduling, and distribution clerks, n.e.c.	2.5	2.3	1.7	.8
Receptionists	1.9	2.2	1.5	.5
Investigators and adjusters, except insurance	1.8	2.2	1.5	1.2
Administrative support occupations, n.e.c.	1.7	2.1	1.8	1.1
Accountants and auditors	.8	1.7	2.2	4.4
Data-entry keyers	1.5	1.6	1.3	.4
Typists	1.4	1.5	1.2	.5
General office clerks	1.5	1.5	1.0	.6
Supervisors, administrative support occupations	1.1	1.4	1.0	.8
Licensed practical nurses	.3	1.3	2.6	.2
Managers, medicine and health	.6	1.2	1.9	1.6
Managers, food serving and lodging establishments	1.7	1.2	.7	1.0
Registered nurses	.3	1.2	13.4	6.9
Other financial officers	.7	1.1	1.0	1.1
Management related occupations, n.e.c	.9	1.1	1.2	1.1
Health technologists and technicians, n.e.c.	.8	1.1	1.7	.3
Writers, artists, entertainers, and athletes	.7	1.1	1.4	3.7
Financial managers	.5	1.1	.5	1.4
Insurance adjusters, examiners, and investigators	.7	1.1	.7	.7
Teachers aides	1.0	1.1	.9	.5
Protective service occupations	.8	1.0	.6	.6
Mail and message distributing occupations	1.1	1.0	.5	.4
Social, recreation, and religious workers	.5	.9	1.0	2.8
Family child-care providers	1.1	.9	.7	.4
Officials and administrators, public administration	.6	.9	.6	.9
Mathematical and computer scientists	.3	.8	.9	2.2
Cleaning and building service occupations, except private household	2.8	.8	.6	.2
Sales representatives, mining, manufacturing, and wholesale	.6	.8	.7	1.5
Bank tellers	1.0	.7	.4	.2
Assemblers	2.1	.7	.5	.1
Teachers, prekindergarten and kindergarten	.5	.7	.9	1.8
Legal assistants	.4	.7	1.0	.6
Waiters and waitresses	1.1	.7	.4	.2
Hairdressers and cosmetologists	1.5	.7	1.2	.1
Personnel, training, and labor relations specialists	.4	.7	.5	1.2
Managers, marketing, advertising, and public administration	.2	.6	.5	1.2
Cooks	1.6	.5	.5	.1
Managers, service organizations, n.e.c.	.3	.5	.6	1.2
Clinical laboratory technologists and technicians	.3	.5	1.1	1.0

n.e.c. = not elsewhere classified
SOURCE: Current Population Survey

Chart 1

Employment distribution and median weekly earnings of male wage and salary workers employed full time, by educational level and occupational group, 1996



of earnings from not completing a degree is defined as a wage discount.

Median earnings of men with some college but no degree were 13 percent higher than those of men with just a high school diploma; women with some college earned 14 percent more than their high school counterparts did. Compared to associate degree holders, however, men with some college earned 7 percent less—and women with some college earned 13 percent less. The corresponding differences were greater at the bachelor's degree level: Men with some college earned 26 percent less than bachelor's degree holders, and women earned 31 percent less.

Premiums and discounts for those with come college exist for two reasons. First, workers with some college were more likely than high school graduates but less likely than college graduates to be in higher paid occupations. Second, within an occupation, workers with some college usually earned more than their high school graduate coworkers and less than those who had graduated from college.

Effect of differing occupational patterns. Employment data for occupational groups are divided into four categories, each consisting of groups with similar median earnings. The categories for men, ranked by level of earnings from highest to lowest, include:

- Executive, administrative, and managerial occupations; professional specialty occupations; technicians; nonretail sales occupations; and police and firefighters;
- Precision production, mechanics, and construction craft occupations;
- Machine operators, assemblers, and inspectors; transportation and material moving occupations; handlers, equipment cleaners, helpers, and laborers; and farming, forestry, and fishing occupations;
- Administrative support occupations, including clerical; retail sales; and service occupations, except police and firefighter.

Chart 1 shows the employment distribution for men in these categories at each educational level.

About 40 percent of men with some college were in the executive occupations group, which had earnings well above the median for all other occupations. In contrast, only 20 percent of men with a high school diploma were in this earnings group. Not surprisingly, so were 46 percent of men with an associate degree and 78 percent of those with a bachelor's degree. The machine operators group, which had median earnings well below that for all men, included only 20 percent

Table 4

Median weekly earnings of full-time workers, by sex and level of education, 1996

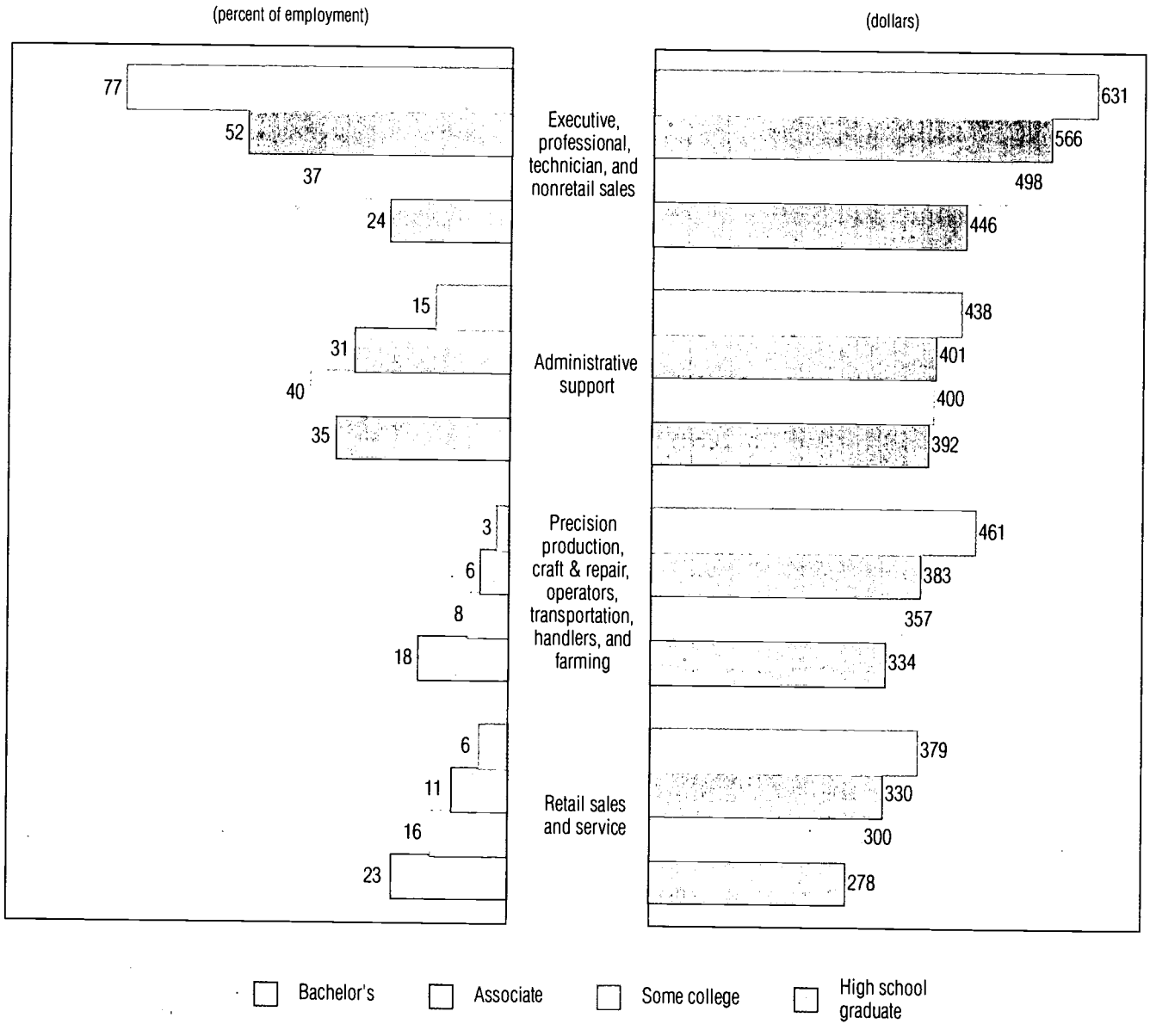
	Men		Women	
	Median	Premium or discount[1]	Median	Premium or discount[1]
All levels	$584	.98	$435	.94
High school graduate or equivalent	504	1.13	361	1.14
Some college, no degree	571	1.00	411	1.00
Associate degree	612	.93	473[2]	.87[2]
Bachelor's degree	767	.74	592	.69

[1] This shows the earnings of workers with some college divided by the earnings of workers in each education group. For example, men with some college earned $1.13 for every $1 earned by high school graduates but earned 93 cents for every $1 earned by associate degree graduates.

[2] For women with associate degrees, except registered nurses, the median was $440 and the index was .93.

Chart 2

Employment distribution and median weekly earnings of female wage and salary workers employed full-time, by educational level and occupational group, 1996



of men with some college but 34 percent of high school graduates.

In the other two groups, patterns tended to lower earnings relative to those of men with high school diplomas, but the overall effect was minor. Men with some college were 2 percent more likely to be in the low-paid administrative support occupations. And men with some college were less likely than high school graduates to be in the precision production occupations category, which had median earnings that were somewhat above average.

The categories for women, also ranked by level of earnings, include:

- Executive, administrative, and managerial occupations; professional specialty occupations; technicians; and nonretail sales occupations;
- Administrative support occupations;
- Precision production, craft, and repair occupations; machine operators, assemblers, and inspectors; transportation and material moving occupations; handlers, equipment cleaners, helpers, and laborers; and farming, forestry, and fishing occupations;
- Retail sales and service occupations;

Chart 2 shows the employment distribution for women in these categories at each educational level.

Thirty-seven percent of women with some college, but only 24 percent of high school graduates, were in the executive occupations category, having the highest median earnings. Also in this category were 52 percent of women with an associate degree, and 77 percent with a bachelor's degree. Only 24 percent of women with some college, but 41 percent of women with high school diplomas, were in the categories having the lowest median earnings, those that include retail sales and precision production occupations. These two groups also had 17 percent of those with an associate degree, and 8 percent with a bachelor's degree.

However, women with some college were more likely than high school graduates to be in below-average earnings category of administrative support occupations.

Occupational earnings and premiums within occupations. Within each occupation, as within occupational groups, workers with some college usually earned more than their high school graduate counterparts but less than those with an associate or a bachelor's degree. Tables 5 and 6 show earnings and earnings premiums or discounts for individual occupations.

Men with some college had higher earnings than those with only a high school diploma in 70 percent of occupations for which there were statistically reliable data; women with some college earned more in 73 percent of occupations as well. Additionally, men with some college earned less than men with an associate degree in 76 percent of the occupations, while women earned less in 71 percent of occupations in the same comparison.

In some occupations, the earnings of workers with some college were the same or lower than those of high school graduates. This is usually because a greater proportion of workers with some college was young, and young workers with little or no experience usually earn less. Data examining occupational patterns only for those workers aged 35-64 show that, in almost all cases, workers with some college earned more than high school graduates.

Tables 5 and 6 also show the variation in earnings of workers with some college, depending on the occupation. Note that workers with some college employed in occupations such as nursing aides, and retail sales workers earned less than the median for all high school graduates. Meanwhile, workers with some college employed as engineers, managers and administrators not elsewhere classified, and financial managers earned premiums of at least 50 percent over the median for high school graduates.

Conclusion

Data in this article show that education pays off for workers with some college but no degree. In 1996, these workers were more likely than high school graduates to be in college-level jobs and to earn substantially more than workers with a high school diploma. Nevertheless, those with some college but no degree were less likely to be in college-level jobs than were workers with an associate or bachelor's degree, and their overall median earnings were below those of their college-graduate counterparts.

All differences in occupational patterns and earnings may not be attributable to level of education, however. People who complete just a few college courses may have different personal characteristics from people who do not, perhaps including level of maturity and ambition; verbal, mathematical, or mechanical abilities; or a preference for working with people, data, or things. These differences may affect their occupational choices and earnings. In addition, occupational patterns and earnings may reflect nonacademic training acquired on the job, through postsecondary vocational schools, in the military, or elsewhere. It is clear, however, that completion of some college coursework increases one's chances of entering certain occupations and usually increases earnings within that occupation.

Table 5

Median weekly earnings of full-time wage and salary workers, men with some college compared to men at other educational levels, 1996

Occupation	Level of education					Premium or discount[1] for workers with some college, no degree compared to...		
	All levels	High school graduate or equivalent	Some college, no degree	Associate degree recipient	Bachelor's degree recipient	High school graduate	Associate degree recipient	Bachelor's degree recipient
Total employed	$584	$504	$571	$612	$767	1.13	.93	.74
Writers, artists, entertainers, and athletes	743	585	698	742	747	1.19	.94	.93
Cashiers	303	269	310	—	—	1.15	—	—
Construction laborers	409	414	474	—	—	1.14	—	—
Police and detectives, public service	688	612	695	657	748	1.14	1.06	.93
Managers, food serving and lodging establishments	539	480	542	581	636	1.13	.93	.85
Precision metalworking occupations	603	588	658	682	—	1.12	.96	—
Automotive mechanics	502	508	567	580	—	1.12	.98	—
Carpenters	502	513	569	—	612	1.11	—	.93
Supervisors, production occupations	653	623	685	824	806	1.10	.83	.85
Supervisors and proprietors, sales occupations	614	550	605	594	748	1.10	1.02	.81
Engineers	962	794	876	835	971	1.10	1.05	.90
Plumbers, pipefitters, and steamfitters	603	597	648	—	—	1.09	—	—
Busdrivers	477	480	521	—	—	1.09	—	—
Managers and administrators, n.e.c.	935	726	785	839	1,082	1.08	.94	.73
Electricians	638	619	671	697	—	1.08	.96	—
Guards and police, except public service	370	338	366	—	—	1.08	—	—
Machine operators and tenders, except precision	438	464	499	482	491	1.08	1.04	1.02
Supervisors, construction occupations	676	659	711	—	—	1.08	—	—
Truckdrivers	493	504	541	583	480	1.07	.93	1.13
Power plant, water, and other system operators	635	607	652	—	—	1.07	—	—
Farm occupations, except managerial	293	325	349	—	—	1.07	—	—
Health technologists and technicians	547	474	501	572	620	1.06	.88	.81
Material recording, scheduling, and distribution clerks, n.e.c.	464	463	484	472	527	1.05	1.03	.92
Firefighting occupations	665	632	658	—	—	1.04	—	—
Industrial truck and tractor equipment operators	425	460	478	—	—	1.04	—	—
Groundskeepers and gardeners, except farm	314	329	341	—	—	1.04	—	—
Bus, truck, and stationary engine mechanics	564	565	585	—	—	1.04	—	—
Cooks	300	307	315	309	—	1.03	1.02	—
Electrical and electronic equipment repairers	684	685	706	680	664	1.03	1.04	1.06
Janitors and cleaners	323	350	362	—	—	1.03	—	—
Production inspectors, checkers, and examiners	507	503	520	—	—	1.03	—	—
Assemblers	447	470	481	—	—	1.02	—	—
Farm operators and managers	469	465	475	—	625	1.02	—	.76
Mail carriers, postal service	684	676	690	—	—	1.02	—	—
Industrial machinery repairers	579	588	600	—	—	1.02	—	—
Welders and cutters	488	500	510	—	—	1.02	—	—
Nursing aides, orderlies, and attendants	348	349	353	—	—	1.01	—	—
Mathematical and computer scientists	936	818	819	831	941	1.00	.99	.87
Heating, air conditioning, and refrigeration mechanics	544	559	559	—	—	1.00	—	—
Sales representatives, mining, manufacturing and wholesale trade	728	619	611	697	841	.99	.88	.73
Administrative support occupations, including clerical	506	505	498	515	557	.99	.97	.89
Laborers, except construction	388	404	401	.99				
Sales workers, retail and personal services	415	410	400	409	543	.98	.98	.74
Insurance, real estate and other services sales workers	732	606	559	639	835	.92	.87	.67
Engineering technologists and technicians	648	660	609	639	711	.92	.95	.86
Painters, construction and maintenance	421	482	430	—	—	.89	—	—
Correctional institution officers	568	612	499	—	—	.82	—	—

[1] This is the earnings of workers with some college divided by earnings in each education group. Thus, men in police and detective occupations with some college earned $1.14 for every $1 earned by high school graduates but 93 cents for every $1 earned by those with a bachelor's degree. Occupations are ranked by index for workers with some college but no degree to that of high school graduates.

n.e.c. = not elsewhere classified

— = Less than 50,000

SOURCE: Current Population Survey

Table 6

Median weekly earnings of full-time wage and salary workers, women with some college compared to women at other educational levels, 1996

Occupation	Level of education					Premium or discount[1] for workers with some college, no degree compared to...		
	All levels	High school graduate or equivalent	Some college, no degree	Associate degree recipient	Bachelor's degree recipient	High school graduate	Associate degree recipient	Bachelor's degree recipient
Total employed	$435	$361	$411	$473	$592	$1.14	.87	.69
Protective service occupations	456	357	501	—	657	1.40	—	.76
Sales representatives, mining, manufacturing, and wholesale trade	589	438	551	—	747	1.26	—	.74
Social, recreation, and religious workers	494	338	417	438	483	1.23	.95	.86
Health technologists and technicians, n.e.c.	417	377	440	476	442	1.17	.92	1.00
Real estate sales occupations	503	447	524	—	548	1.17	—	.96
Health aides, except nursing	314	289	337	—	—	1.17	—	—
Writers, artists, entertainers, and athletes	544	393	449	504	584	1.14	.89	.77
Managers and administrators, n.e.c.	623	495	554	625	756	1.12	.89	.73
Teachers, prekindergarten and kindergarten	370	251	282	—	474	1.12	—	.59
Supervisors, general office	506	470	526	—	—	1.12	—	—
Dental assistants	361	364	405	—	—	1.11	—	—
Teachers aides	273	257	285	—	—	1.11	—	—
Cleaning and building service occupations	272	278	308	—	—	1.11	—	—
Waiters and waitresses	267	265	291	—	287	1.10	—	1.01
Other financial officers	606	522	571	—	622	1.09	—	.92
Assemblers	325	342	374	—	—	1.09	—	—
Farming, forestry, and fishing occupations	268	295	321	—	324	1.09	—	.99
Administrative support occupations, n.e.c.	453	420	456	462	495	1.09	.99	.92
Supervisors and proprietors, sales occupations	424	392	425	494	571	1.08	.86	.74
Nursing aides, orderlies, and attendants	292	291	313	308	—	1.08	1.02	—
Precision production, craft, and repair occupations	384	379	404	430	632	1.07	.94	.64
Secretaries	411	398	425	429	412	1.07	.99	1.03
Accountants and auditors	564	482	508	484	616	1.05	1.05	.82
Managers, medicine and health	613	497	523	610	732	1.05	.86	.71
Transportation and material moving occupations	357	357	369	—	—	1.03	—	—
Financial managers	636	560	578	—	785	1.03	—	.74
Mail and message distributing occupations	542	527	543	—	—	1.03	—	—
Receptionists	344	341	350	344	357	1.03	1.02	.98
Investigators and adjusters, except insurance	406	392	403	393	467	1.03	1.03	.86
Licensed practical nurses	469	460	472	468	—	1.03	1.01	—
Administrators and officials, public administration	639	547	558	—	747	1.02	—	.75
Handlers, equipment cleaners, helpers, and laborers	302	308	314	—	—	1.02	—	—
Sales workers, retail and personal services	277	271	273	348	408	1.01	.78	.67
Insurance sales occupations	483	459	459	—	617	1.00	—	.74
Management related occupations, n.e.c.	508	495	494	—	549	1.00	—	.90
Managers, food serving and lodging establishments	405	389	388	—	511	1.00	—	.76
Typists	407	408	404	—	—	.99	—	—
Bank tellers	317	318	314	—	—	.99	—	—
Bookkeepers, accounting, and auditing clerks	400	401	394	396	437	.98	.99	.90
General office clerks	371	369	361	—	424	.98	—	.85
Insurance adjusters, examiners, and investigators	462	456	446	—	518	.98	—	.86
Computer operators	410	419	407	—	—	.97	—	—
Data-entry keyers	368	377	363	—	—	.96	—	—
Legal assistants	559	571	523	—	—	.92	—	—
Hairdressers and cosmetologists	298	298	271	—	—	.91	—	—

[1] This is the earnings of workers with some college divided by earnings in each education group. Thus, women in protective service occupations with some college earned $1.40 for every $1 earned by high school graduates but 76 cents for every $1 earned by those with a bachelor's degree. Occupations are ranked by index for workers with some college but no degree to that of high school graduates.

n.e.c. = not elsewhere classified

— = Less than 50,000

SOURCE: Current Population Survey

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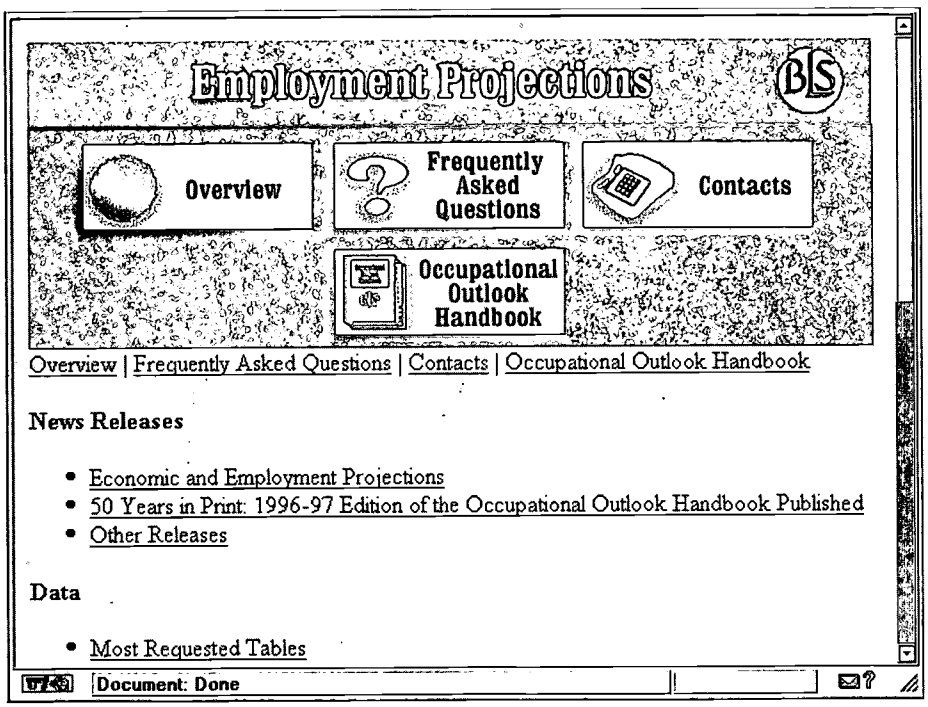

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Bureau of Labor Statistics
Postal Square Building, Rm. 2850
2 Massachusetts Ave., NE
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