

## More U.S. workers are college graduates

ANNE MCDUGALL YOUNG AND HOWARD HAYGHE

From now until about the end of the decade, the last of the enormous postwar birth cohort will pass through school and into the adult labor force. Millions more workers will have college degrees, as the anticipated number of bachelors' and higher degrees awarded will continue to exceed a million a year for the rest of the 1980's.<sup>1</sup> Thus, college graduates will continue to represent a growing proportion of the labor force.

Today, nearly 1 in 4 adult workers has completed college. A little more than a decade ago, in 1970, just 1 in 7 had as much formal schooling. During the 13-year interval, the baby-boom generation—now concentrated in the 25- to 34-years age group—went to college in record numbers, and, in most of these years, over a million bachelors' and advanced degrees were awarded annually.<sup>2</sup> This growth, together with the fact that labor force participation rates of college graduates are typically higher than the rates for persons with fewer years of school, generated significant increases in the college-educated work force.<sup>3</sup>

### More college graduates

Between 1970 and 1983, the number of 25- to 64-year-old workers with 4 years or more of college increased by 11.5 million. Almost half of this rise was among 25- to 34-year-olds, with 35- to 44-year-olds accounting for most of the rest. While the proportion of working men ages 25 to 64 with a college degree rose by more than two-thirds over the 1970-83 period, that of women almost doubled. (See table 1.) Along with the increase in the number of graduates, the sharp upward trend in women's labor force participation was a major factor contributing to this rise. From 1970 to 1983, the labor force participation rate increased for all but the oldest group of female college graduates, with that of 25- to 34-year-olds rising the most:

Age	Women		Men	
	1970	1983	1970	1983
25 to 64 years .....	61	77	96	95
25 to 34 years .....	58	82	95	95
35 to 44 years .....	58	76	99	98
45 to 54 years .....	67	73	97	96
55 to 64 years .....	64	56	90	83

In the past, household and child-care responsibilities were among the major reasons for women ages 25 to 34 to stay at home. During the 1970's, inflation and economic need, among other factors, apparently became more compelling

reasons for women in this age cohort to work outside the home. By 1983, not only did fewer married college graduates ages 25 to 34 have preschool children (53 percent versus 68 percent in 1970), but those who did have children under age 6 were far more likely to be in the labor force (61 percent compared with 34 percent in 1970).<sup>4</sup> The labor force participation rate of 55- to 64-year-old college graduates generally paralleled the downward trend for all women in this age group during most of the 1970-83 period.

In contrast to the situation among most women, there has been a decrease in the labor force participation rates of adult men in all educational attainment groups. For male college graduates, however, the rate has slipped by only a percentage point since 1970. This decline was considerably less than for men in other educational attainment categories, and, like that of the other men, it occurred primarily among those in the older age brackets. One result of these contrasting male-female labor force trends has been that women's share of the college-graduate work force increased, from 27 percent in 1970 to 38 percent in 1983.

The ongoing decline in the number of school leavers—workers who have not completed 12 years of formal schooling—is an additional factor behind the growth in college graduates' share of the adult work force. Between March 1970 and 1983, the total number of school leavers in the labor force declined by more than 7 million, mostly because of retirement or death among older workers who have typically completed fewer years of school than younger workers.

### Black and Hispanic workers

Blacks and Hispanics have joined in the general upgrading of the educational attainment of the population in recent years. However, their proportions with college degrees continue to be much lower than that of whites. In 1983, 13 percent of adult black workers and 10 percent of Hispanics were college graduates, compared with 25 percent of whites. Moreover, since 1970, the percentage-point increase for blacks (5 points) and Hispanics (3 points) has been much smaller than for whites (10 points). For both whites and blacks, the proportions of adult workers who were school leavers dropped by about half, while the share for Hispanics declined by one-third. This difference in the size of the decline between Hispanics on the one hand, and whites and blacks on the other, may reflect recent immigration from countries where the propensity to stay in school is not as great as in the United States, and public educational opportunities are not as widely available.<sup>5</sup>

Greater educational attainment was linked with higher labor force participation rates for all race and ethnic groups. However, labor force rates differed significantly for some race and sex groups with the same general level of schooling. Age was sometimes an important factor. For instance, among dropouts in the adult labor force, almost 40 percent of the male Hispanics were 25 to 34 years old, compared

Anne McDougall Young and Howard Hayghe are economists in the Division of Employment and Unemployment Analysis, Bureau of Labor Statistics.

**Table 1. Labor force status of persons 25 to 64 years old by years of school completed, sex, race, and Hispanic origin, March 1970 and 1983**

[Numbers in thousands]

Labor force status and years of school completed	Total		Men		Women		White		Black		Hispanic origin	
	1970	1983	1970	1983	1970	1983	1970	1983	1970 <sup>1</sup>	1983	1970 <sup>2</sup>	1983
Civilian noninstitutional population	87,983	111,658	42,049	53,862	45,934	57,794	78,576	96,864	9,335	11,739	3,542	6,258
Less than 4 years of high school	34,092	24,633	16,520	11,945	17,572	12,688	28,454	19,677	5,564	4,323	2,328	3,219
High school: 4 years only	33,470	44,815	14,077	19,224	19,393	25,590	31,001	39,516	2,471	4,430	802	1,799
College: 1 to 3 years	9,844	18,996	5,025	9,229	4,819	9,768	9,182	16,755	662	1,756	243	721
4 years or more	10,577	23,213	6,427	13,463	4,150	9,749	9,939	20,914	639	1,230	169	519
Civilian labor force	61,760	83,615	39,302	47,903	22,458	35,712	55,043	72,750	6,724	8,592	2,320	4,378
Less than 4 years of high school	22,288	14,857	14,757	9,303	7,531	5,556	18,537	11,976	3,735	2,525	1,415	1,989
High school: 4 years only	23,508	33,397	13,557	17,404	9,951	15,993	21,613	29,301	1,895	3,459	572	1,378
College: 1 to 3 years	7,261	15,159	4,811	8,459	2,450	6,702	6,728	13,304	535	1,483	191	576
4 years or more	8,703	20,201	6,177	12,738	2,526	7,462	8,145	18,171	559	1,127	142	434
Labor force participation rate	70.2	74.9	93.5	88.9	48.9	61.8	70.0	75.1	72.0	73.2	65.5	70.0
Less than 4 years of high school	65.4	60.3	89.3	77.9	42.9	43.8	65.1	60.9	67.1	58.4	60.8	61.7
High school: 4 years only	70.2	74.5	96.3	90.5	51.3	62.5	69.7	74.1	76.7	78.1	71.3	76.6
College: 1 to 3 years	73.8	79.8	95.6	91.7	50.8	68.6	73.3	79.4	80.8	84.5	78.6	80.2
4 years or more	82.3	87.0	96.3	94.6	60.9	76.5	81.9	86.9	87.5	91.6	84.0	83.6
Unemployed	2,024	7,518	1,121	4,710	904	2,810	1,707	5,835	317	1,440	116	602
Less than 4 years of high school	1,024	2,351	596	150	428	850	830	1,797	196	501	85	350
High school: 4 years only	684	3,347	330	2,069	354	1,277	585	2,606	98	653	22	170
College: 1 to 3 years	206	1,112	129	708	77	405	189	861	18	197	6	55
4 years or more	110	708	65	431	45	277	104	570	5	91	3	27
Unemployment rate	3.3	9.0	2.8	9.8	4.0	7.9	3.1	8.0	4.7	16.8	5.0	13.8
Less than 4 years of high school	4.6	15.8	4.0	16.1	5.7	15.3	4.5	15.0	5.2	19.8	6.0	17.6
High school: 4 years only	2.9	10.0	2.4	11.9	3.6	8.0	2.7	8.9	5.2	18.9	3.8	12.3
College: 1 to 3 years	2.8	7.3	2.7	8.4	3.1	6.0	2.8	6.5	3.4	13.3	3.1	9.5
4 years or more	1.3	3.5	1.1	3.4	1.8	3.7	1.3	3.1	.9	8.1	2.1	6.2

<sup>1</sup>Data refer to black and other workers.

<sup>2</sup>Data are derived from the 1970 census.

NOTE: Detail for the above race and Hispanic-origin groups for 1983 will not sum to totals because data for the "other races" group are not presented and Hispanics are included in both the white and black population groups.

with 25 percent of both whites and blacks. The preponderance of younger workers pushed the labor force participation for Hispanic male dropouts to 87 percent, compared with 79 percent for whites and 72 percent for blacks. (See table 2.)

Black women were much more likely to be in the labor force than white or Hispanic women at every level of schooling, with the difference rising from about 4 percentage points

among dropouts to almost 15 percentage points among college graduates. The persistence of higher labor force rates among black women reflects, in part, financial need in families where the men, on average, have lower earnings than white men at all levels of education.<sup>6</sup> Also, a larger proportion of black families were maintained by women, 42 percent in March 1983, compared with about 13 percent of white families and 23 percent of Hispanic families.<sup>7</sup>

As can be seen, the overall participation rate for Hispanic women was lower than that for either blacks or whites. This is partly because more than half of the Hispanic women in the population had not completed high school, compared with only a fourth of the whites and a third of the blacks. Because labor force participation rates of high school dropouts are typically lower than for other education groups, the concentration of Hispanic women in that category had the effect of decreasing their overall labor force rate. Also, relatively more Hispanic than white or black women had children under age 6, whose presence tends to inhibit mothers' labor force participation.

### New occupational classification

The occupational classification system used since the 1970 decennial census has now been replaced by one that links occupational titles more closely to job function. Beginning in January 1983, the four traditional summary groups (white-

**Table 2. Labor force participation rates of persons 25 to 64 years old by years of school completed, sex, and race, March 1983**

[Percent]

Years of school completed and sex	White	Black	Hispanic origin
<b>MEN</b>			
Total	89.8	81.7	90.4
Less than 4 years of high school	79.3	71.5	86.5
High school: 4 years only	91.0	86.5	93.7
College: 1 to 3 years	92.1	87.6	95.4
4 years or more	94.7	93.4	93.8
<b>WOMEN</b>			
Total	61.1	66.4	52.2
Less than 4 years of high school	42.9	47.3	41.8
High school: 4 years only	61.4	71.9	62.0
College: 1 to 3 years	67.2	81.9	64.6
4 years or more	75.6	90.1	72.7

**Table 3. Employed civilians 25 to 64 years old by years of school completed, race, Hispanic origin, and occupation, March 1983**

[Percent distribution]

Years of school completed, race, and Hispanic origin	Employed		Executive, administrative and managerial	Professional specialty	Technical, sales, and administrative support	Service occupations	Precision production, craft, and repair	Operators, fabricators, and laborers	Farming, forestry, and fishing
	Number (in thousands)	Percent							
Total .....	76,097	100.00	12.6	15.1	30.2	11.3	12.7	15.3	3.0
Less than 4 years of high school									
Total .....	12,505	100.0	4.1	1.2	13.4	20.6	19.1	34.9	6.6
White .....	10,179	100.0	4.6	1.3	14.4	17.6	21.2	34.3	6.6
Black .....	2,023	100.0	1.4	.9	9.4	33.7	8.9	38.6	7.2
Hispanic origin .....	1,639	100.0	2.2	.9	9.9	23.2	16.5	38.7	8.5
High School: 4 years only									
Total .....	30,051	100.0	8.7	3.1	36.9	13.1	16.4	18.8	3.0
White .....	26,694	100.0	9.1	3.1	38.1	11.9	17.0	17.7	3.2
Black .....	2,805	100.0	4.7	3.0	27.5	24.2	10.8	28.8	1.1
Hispanic origin .....	1,208	100.0	7.5	1.6	34.7	15.1	15.1	23.9	2.2
College: 1 to 3 years									
Total .....	14,047	100.0	14.3	11.4	41.3	9.7	12.2	9.0	2.1
White .....	12,446	100.0	15.0	11.8	41.4	9.0	12.3	8.2	2.2
Black .....	1,287	100.0	8.9	8.5	41.7	14.9	10.1	15.3	.6
Hispanic origin .....	523	100.0	13.0	7.8	42.6	9.4	12.2	14.3	.4
College: 4 years or more									
Total .....	19,492	100.0	22.8	45.0	22.7	3.5	3.1	1.8	1.1
White .....	17,599	100.0	23.3	45.2	22.2	3.3	3.1	1.6	1.2
Black .....	1,035	100.0	18.7	45.6	21.9	6.1	3.1	4.4	.1
Hispanic origin .....	407	100.0	21.4	42.0	19.2	9.1	4.9	2.5	1.2

collar, blue-collar, service, and farm) into which Current Population Survey (CPS) occupational data were divided, were replaced by the system of six major groups—identified in table 3—that was used for 1980 census data. Many of the new occupational categories are different from the old ones, and the introduction of the new system in 1983 breaks the continuity somewhat of CPS occupational data series.<sup>8</sup>

However, the data based on the new classification system continue to confirm the well-known fact that educational attainment is one of the most important determinants of occupation. In March 1983 the largest proportion of school dropouts of all races were operators, fabricators, and laborers. High school graduates were concentrated in the technical, sales, and administrative support category, with a large proportion also working as operators, fabricators, and laborers. Among workers who had attended but not graduated from college, most were in occupations similar to those of high school graduates. But of those with 4 years of college or more, 3 out of 5 were in managerial and professional specialty occupations.

FROM A NATIONAL STANDPOINT, a better trained work force is highly desirable. However, with respect to the college educated, the growth in the number of adult workers with degrees carries with it the possibility of an uncertain future for many young college graduates. This is because the greatest increase in the number of jobs over the decade to come is projected for such occupations as janitors, sales clerks, secretaries, and so forth.<sup>9</sup> Thus, the potential exists for a growing mismatch between actual educational levels and

those required for occupations with the greatest anticipated growth.<sup>10</sup> In other words, many college graduates—perhaps 20 percent—will not be able to get jobs requiring a college degree, continuing the situation that has prevailed in recent years. Such mismatches could seriously affect the lives of many young workers and their families for years to come. □

## FOOTNOTES

<sup>1</sup>Martin M. Frankel and Debra E. Gerald, *Projections of Education Statistics to 1990-91*, Vol. 1 (National Center for Education Statistics, 1983).

<sup>2</sup>Ibid.

<sup>3</sup>Data in this report are based on tabulations from the March 1983 Current Population Survey (CPS), conducted for the Bureau of Labor Statistics by the Bureau of the Census. The data relate to persons 25 to 64 years old, unless otherwise specified. Because these estimates are based on a sample, they may differ from those obtained if a complete census were conducted. Sampling variability may be relatively large in cases where the estimates are small. Small estimates, or small differences between estimates, should be interpreted with caution. This report is the latest in a series on this subject. The most recent was Anne McDougall Young, "Recent trends in higher education and labor force activity," *Monthly Labor Review*, February 1983, pp. 39-41. A research summary, "Educational attainment of workers, March 1981," detailed tables for March 1981, and summary educational attainment tables for 1980 revised to the 1980 Census base are included in *Educational Attainment of Workers, March 1981*, Bulletin 2159 (Bureau of Labor Statistics, January 1983).

<sup>4</sup>Unpublished tables from the March supplement to the Current Population Survey (Bureau of Labor Statistics).

<sup>5</sup>George H. Brown, Nan L. Rosen, and Susan T. Hill, *Conditions of Education for Hispanic Americans* (National Center for Education Statistics, February 1980).

<sup>6</sup>"Money Income of Households, Families, and Persons in the United States: 1981, Current Population Reports, Series P-60, No. 137 (Bureau of the Census, 1983), table 47.

<sup>7</sup>See Beverly L. Johnson and Elizabeth Waldman, "Most women who head families receive poor job market returns," *Monthly Labor Review*, December 1983, pp. 30-34.

<sup>8</sup>See Gloria Peterson Green and others, "Revisions in the Current Population Survey Beginning in January 1983," *Employment and Earnings*, February 1983, pp. 7-15; and John E. Bregger, "Labor Force Data from CPS to Undergo Revision in January 1983," *Monthly Labor Review*, November 1982, pp. 3-6.

<sup>9</sup>See George T. Silvestri, John M. Lukasiewicz, and Marcus E. Einstein, "Occupational employment projections through 1995," *Monthly Labor Review*, November 1983, pp. 37-49.

<sup>10</sup>See *Occupational Projections and Training Data*, Bulletin 2202 (Bureau of Labor Statistics, 1982), pp. 10 and 11.

## Pay in Mountain region coal mines outstrips national average

NORMA W. CARLSON

Coal miners in the Mountain States<sup>1</sup> averaged \$13.28 an hour in July 1982, according to an occupational wage survey by the Bureau of Labor Statistics. (See table 1.) This was 12 percent above the national average for bituminous coal mining and translated into a regional pay advantage of 2 percent in underground mines and 24 percent in surface mines.

At the time of the survey, mining in the Mountain States employed some 15,000 production workers, double the number recorded in an earlier survey conducted in January 1976. A preponderance of these workers were in mines with at least 250 employees, and most were unionized. The region's nonunion workers, however, averaged as much or more than their unionized counterparts, particularly among the 7,725 workers employed in underground mines.

Historically, six States—Illinois, Kentucky, Ohio, Pennsylvania, Virginia, and West Virginia—have accounted for the bulk of the work force in bituminous coal mining. Despite rapid growth in the Mountain States in recent years, these six States still accounted for nearly 80 percent of the Nation's soft coal employment in July 1982; in the 1976 survey, the proportion was 85 percent.

*National pay levels.* Nationwide, straight-time earnings of bituminous coal miners averaged \$11.83 an hour in July 1982, up from \$6.94 in January 1976. This represented a 70-percent increase over the 6½ years since the previous survey<sup>2</sup>, or an average annual rise of 8.5 percent. By comparison, the Bureau's Employment Cost Index for all private nonagricultural workers rose 61 percent, or approximately

7.7 percent a year, between the first quarter of 1976 and the second quarter of 1982.

Workers in underground mines, nearly seven-tenths of the 158,803 workers covered by the 1982 survey, averaged \$11.92 an hour—2 percent more than the \$11.65 recorded in surface mines. (See table 1.) This pay relationship, however, was mixed among sections of the country. For example, average earnings of underground-mine workers in Pennsylvania and Kentucky exceeded those of surface-mine workers by 20 percent and 11 percent, respectively. But surface miners held a pay advantage averaging 19 percent in the Mountain States and 4 percent in Illinois.

*Earnings distributions narrow.* Earnings of individual workers in bituminous coal mines continued to be concentrated within relatively narrow ranges. The middle 50 percent of the production work force earned between \$11.36 and \$12.43 an hour in underground mines, and between \$10.37 and \$13.15 an hour in surface mines. The industry's pay systems contribute to this heavy concentration of earnings, as virtually all workers are under formal plans providing single rates for specific groups of occupations. Moreover, the custom of granting wage changes on a uniform cents-per-hour basis has shrunk the industry's wage structure in relative terms.

Pay schedules from the pattern-setting contract between the United Mine Workers of America (UMWA) and the Bituminous Coal Operators' Association (BCOA) illustrate the single-rate arrangements for job groups as well as the effect of uniform cents-per-hour increases (table 2). As of June 7, 1982, mining jobs in both branches of the industry were grouped into five pay grades, with rates ranging from \$11.348 to \$12.415 in underground mines, and from \$11.796 to \$13.178 in surface mines.

A comparison of the June 7, 1982, rates with those in effect June 12, 1976, illustrates the pay compression effects of uniform cents-per-hour increases. Pay differences between grades 1 and 5 over this period declined from 15.7 percent to 9.4 percent in underground mines and from 19.0 percent to 11.7 percent in surface mines, while dollar differences among grades remained unchanged. A look at the wage terms of the two most recent UMWA-BCOA agreements shows why this is so.

The March 1978 agreement provided for an immediate \$1-an-hour general wage increase and a 28-cents-per-hour cost-of-living adjustment, plus increases of 70 cents each in March 1979 and March 1980. The 3-year agreement negotiated in 1981 provided for general wage increases of \$1.20 an hour in June 1981, 50 cents in June 1982, and 40 cents in June 1983, plus nine quarterly increases consisting of 15 cents in June 1982 and each quarter thereafter to March 1984, plus a final 30 cents in June 1984.

*Union-nonunion pay.* Union members accounted for nearly four-fifths of the industry's production work force. They

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Norma W. Carlson is a labor economist in the Division of Occupational Pay and Employee Benefit Levels, Bureau of Labor Statistics