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Education Matters: Earnings and Employment Outcomes by Educational Attainment

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Abstract. The amount of education in which individuals invest greatly influences their labor market outcomes. For example, highly educated workers on average are better paid than other workers. Four-year college graduates also are less at risk of unemployment; if they should lose their jobs, these displaced workers are more likely than others to find new jobs. The importance of educational attainment to earnings levels has grown over time as well. Concern about the extent of wage inequality in U.S. society arose in part because of the comparatively large increases in real (inflation-adjusted) earnings of workers with at least a bachelor's degree.

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Education Matters: Earnings and Employment Outcomes by Educational Attainment

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Summary

The amount of education in which individuals invest greatly influences their labor market outcomes. For example, highly educated workers on average are better paid than other workers. Four-year college graduates also are less at risk of unemployment; if they should lose their jobs, these displaced workers are more likely than others to find new jobs. The importance of educational attainment to earnings levels has grown over time as well. Concern about the extent of wage inequality in U.S. society arose in part because of the comparatively large increases in real (inflation-adjusted) earnings of workers with at least a bachelor's degree.

The benefits of greater educational attainment that accrue to individuals are both monetary (e.g., higher earnings) and nonmonetary (e.g., better health). The benefits of additional years of schooling extend beyond individuals and their families. These societal benefits also are of a pecuniary (e.g., greater economic growth) and nonpecuniary (e.g., increased civic involvement) nature. Partly because of the spillover of benefits from individuals to society, Congress has enacted measures to encourage more of the nation's population to enroll in postsecondary educational institutions (e.g., Pell Grants, education tax provisions). This report focuses specifically on differences over time in selected labor market outcomes of individuals associated with their educational attainment.[1]

Earnings

Workers with more education historically have had higher annual earnings on average than workers with less education. In 2006, the latest year for which data are available, a worker with a bachelor's degree earned almost three times more than a worker who had not graduated from high school ($56,788 and $20,873, respectively). As also

[1] For information on societal benefits, see CRS Report RL33238, *The Benefits of Education*, by Linda Levine.

can be seen from the columns labeled "current dollars" in **Table 1**, the importance of educational attainment to earnings has increased over the years. The wage premium of workers with a bachelor's degree compared to workers with some college courses or an associate degree grew by 13 percentage points from 51% on average in the first seven years of the 1980s to 64% on average in the first seven years of the 2000s. The payoff to graduating as opposed to not graduating from high school similarly increased by 14 percentage points from an average of 33% in the earlier period to 47% thus far in the current decade. The wage gap between workers with postsecondary education short of a four-year college degree and high school graduates also widened, but by less than 4 percentage points, from 10% on average in 1980-1986 to under 14% in 2000-2006.

Table 1. Average Earnings of Workers 18 Years or Older by Highest Level of Educational Attainment, 1980 to 2006

Year	All Workers		Not a High School Graduate		High School Graduate (or Equivalent)		Some College or Associate Degree		Bachelor's Degree Only	
	Current Dollars	2006 Dollars	Current Dollars	2006 Dollars	Current Dollars	2006 Dollars	Current Dollars	2006 Dollars	Current Dollars	2006 Dollars
2006	41,412	41,412	20,873	20,873	31,071	31,071	34,650	34,650	56,788	56,788
2005	39,579	40,877	19,915	20,568	29,448	30,414	33,496	34,594	54,689	56,482
2004	37,899	40,454	19,182	20,475	28,631	30,561	32,010	34,168	51,568	55,044
2003	37,046	40,612	18,734	20,537	27,915	30,602	31,498	34,530	51,206	56,135
2002	36,308	40,692	18,826	21,099	27,280	30,574	31,046	34,795	51,194	57,375
2001	35,805	40,776	18,793	21,402	26,795	30,515	30,782	35,056	50,623	57,652
2000	34,514	40,410	17,738	20,768	25,692	30,081	29,939	35,053	49,595	58,067
1999	32,356	39,152	16,121	19,507	24,572	29,733	28,403	34,369	45,678	55,273
1998	30,928	38,205	16,053	19,830	23,594	29,146	27,566	34,052	43,782	54,084
1997	29,514	36,967	16,124	20,196	22,895	28,677	26,235	32,860	40,478	50,700
1996	28,106	35,965	15,011	19,208	22,154	28,348	25,181	32,222	38,112	48,768
1995	26,792	35,196	14,013	18,408	21,431	28,153	23,862	31,347	36,980	48,579
1994	25,852	34,779	13,697	18,427	20,248	27,240	22,226	29,901	37,224	50,077
1993	24,674	33,902	12,820	17,615	19,422	26,686	21,539	29,595	35,121	48,257
1992	23,227	32,703	12,809	18,035	18,737	26,381	20,867	29,380	32,629	45,941
1991	22,332	32,240	12,613	18,209	18,261	26,363	20,551	29,669	31,323	45,221
1990	21,793	32,590	12,582	18,816	17,820	26,649	20,694	30,947	31,112	46,527
1989	21,414	33,620	12,242	19,220	17,594	27,622	20,255	31,800	30,736	48,255
1988	20,060	32,853	11,889	19,471	16,750	27,432	19,066	31,225	28,344	46,420
1987	19,016	32,286	11,824	20,075	15,939	27,062	18,054	30,652	26,919	45,704
1986	18,149	31,855	11,203	19,663	15,120	26,538	17,073	29,966	26,511	46,532
1985	17,181	30,702	10,726	19,167	14,457	25,834	16,349	29,215	24,877	44,454
1984	16,083	29,726	10,384	19,193	13,893	25,679	14,936	27,606	23,072	42,644
1983	15,137	29,123	9,853	18,957	13,044	25,096	14,245	27,407	21,532	41,427
1982	14,351	28,790	9,387	18,831	12,560	25,197	13,503	27,088	20,272	40,668
1981	13,624	28,980	9,357	19,904	12,109	25,758	13,176	28,027	19,006	40,429
1980	12,665	29,505	8,845	20,606	11,314	26,358	12,409	28,909	18,075	42,109

Source: Created by the Congressional Research Service from U.S. Census Bureau, Annual Social and Economic Supplement.

Note: Nominal earnings adjusted for inflation based on the CPI-U-RS (the Consumer Price Index for all Urban Consumers Research Series).

All workers generally have seen their standard of living increase over the years, but their wages have been more insulated from rising prices the greater their educational attainment. The growth in earnings of individuals who did not graduate from high school just slightly outpaced the rise in the Consumer Price Index between 1986 and 2006, which would have increased their purchasing power by $1,210. The real (inflation-adjusted) value of wages paid to workers with a high school diploma or some college or associate degree held up much better against price increases over the 20-year period. They could have bought an additional $4,533 and $4,684, respectively, in goods and services. Bachelor's degree holders fared the best: the purchasing power of their 2006 paychecks was $10,256 greater than their 1986 paychecks. (See columns labeled "2006 dollars" in **Table 1**.)

The real average annual earnings of four-year college graduates grew very substantially and fairly steadily through the mid-1990s, while those of workers with a high school degree or less rose slightly or fell. This disparate pattern sparked still ongoing concern about the extent of wage inequality in U.S. society.[2] Although the real wages of college graduates have continued to increase in the last 10 or so years, the earnings trend of less educated workers has improved. As a result, the premium paid to workers with a bachelor's degree has been rising more slowly in recent years.

The annual earnings differences by level of education presented in **Table 1** can be expected to produce even larger disparities after years spent in the labor force. According to a 2002 Census Bureau study, high school dropouts employed full-time year-round (i.e., at least 35 hours a week at least 50 weeks a year) over a 40-year working life might earn a total of $1.0 million in 1999 dollars. Similarly employed high school graduates might earn $1.2 million, and those with some college courses or an associate degree might earn $1.5-$1.6 million. College graduates employed full-time year-round throughout their working lives were estimated to earn considerably more, $2.1 million on average.[3]

Employment

As educational attainment increases, the likelihood of unemployment decreases. In 2006, for example, the unemployment rate of workers age 25 and older was 6.8% if they lacked a high school diploma, 4.3% if they were high school graduates, 3.6% if they took some postsecondary courses or obtained an associate degree, and 2.0% if they had at least

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[2] See CRS Report RL33835, *Real Earnings and the Distribution of Earnings, 1995-2005*, by Gerald Mayer. See also Thomas Lemieux, "Postsecondary Education and Increasing Wage Inequality," *American Economic Review*, vol. 96, no. 2, May 2006; and for an explanation of changes in the educational wage premium over a longer period of time, see Claudia Goldin and Lawrence F. Katz, *The Race Between Education and Technology: The Evolution of U.S. Educational Wage Differentials, 1890 to 2005*, National Bureau of Economic Research Working Paper 12984, March 2007.

[3] The estimates, expressed in constant 1999 dollars, are based on average earnings of 25- to 64-year-olds in the 1997-1999 period. The individuals are assumed to be employed throughout their 40-year working lives. U.S. Census Bureau, *The Big Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings*, #P23-210, July 2002.

a bachelor's degree.[4] Unlike the previously examined increase over time in the educational wage premium, relative unemployment rates by educational attainment generally have been stable since 1978.[5]

The risk of displacement is lower and the likelihood of reemployment is higher for long-tenured workers with at least a bachelor's degree compared to other workers.[6] Workers with a four-year college degree or more were laid off from long-held jobs at a below-average rate from the late 1990s to the mid-2000s, while the displacement rate of workers with a high school diploma or less usually equaled the average rate. Workers with more years of schooling who were displaced from full-time jobs had a higher rate of reemployment in full-time jobs than displaced workers with fewer years of education. For example, 72% of workers with an advanced degree and 63% of workers with a bachelor's degree displaced from full-time jobs in the January 2003 to December 2005 period were reemployed in full-time jobs in January 2006; comparable reemployment rates were 57% among displaced high school graduates and 39% among displaced workers who did not enter or complete high school.

The U.S. Bureau of Labor Statistics (BLS) projects that employment in occupations typically requiring at least a bachelor's degree will increase by 15.3% between 2006 and 2016, well above the all-occupations average of 10.5%. The nearly five million new jobs estimated to be available to persons with at least a four-year college degree could account for almost one-third of all jobs projected to be added to the economy in the ten-year period. Many of the estimated five million new jobs are in professional occupations. Some professional specialties — computer software engineers (applications), computer systems analysts, and network systems and data communications analysts; elementary and postsecondary school teachers; and accountants and auditors — not only are projected to be among the fastest growing fields but also among those adding the largest number of positions through 2016. Occupations that usually require little or no postsecondary education are projected to grow at a comparatively slow rate, but these less skilled comparatively low-paying jobs (e.g., retail salespersons, food preparation and serving workers, general office clerks, home health aides) nonetheless rank among those estimated to experience the largest numerical increases in employment between 2006 and 2016.[7]

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[4] U.S. Bureau of Labor Statistics (BLS), *Employment and Earnings*, January 2007, Table 7.

[5] Mary C. Daly, Osborne Jackson and Robert G. Valletta, "Educational Attainment, Unemployment, and Wage Inflation," *FRBSF Economic Review*, 2007. Note: The unemployment rate of workers without a high school diploma compared to the overall unemployment rate worsened markedly between 1978 and 2000, but has since shown some improvement.

[6] BLS defines a displaced worker as someone who loses a job held for at least three years because of plant closings or moves, insufficient work, or abolition of positions or shifts. The information in the above paragraph is from unpublished BLS tabulations of the Displaced Worker Survey.

[7] Arlene Dohm and Lynn Shniper, "Occupational Employment Projections to 2016," *Monthly Labor Review*, November 2007.