



Education Pays Update

A Supplement to **Education Pays 2004: The Benefits of Higher Education for Individuals and Society**

In 2004, the College Board published *Education Pays: The Benefits of Higher Education for Individuals and Society*. That report, which accompanied the annual publications, *Trends in Student Aid* and *Trends in College Pricing*, documented many of the benefits generated by higher education for society as a whole, as well as for individual students. In addition to examining both monetary and nonmonetary individual and social returns to the investment in higher education, *Education Pays* highlighted the uneven participation rates across different segments of the U.S. population.

To maintain an accurate focus on both the benefits of higher education and the gaps in access to those benefits that persist in our society, this brief supplement to *Education Pays 2004* updates selected indicators and adds several new perspectives on the issues. As information on the price of college and the availability of student aid focuses a spotlight on the public and private costs of higher education, it is important that both the successes and the shortfalls of these investments be equally visible.

The basic message of both *Education Pays 2004* and this supplement is twofold. First, education does pay. Both individuals who enroll and succeed in college and society as a whole enjoy high rates of return to investments in quality higher education. Second, the magnitude of these benefits makes the continuing gaps in educational opportunity particularly costly.

This supplement to *Education Pays* includes information on some of the benefits of higher education:

- the higher earnings and tax payments associated with higher levels of educational attainment

- increases over time in the earnings premium and in the proportion of the population with college degrees
- differences in employee benefits by level of education
- continued differential voter participation rates in the 2004 election
- differences in health-related behavior patterns by level of education

We also provide new details about the gaps in participation in higher education that were documented in our earlier report:

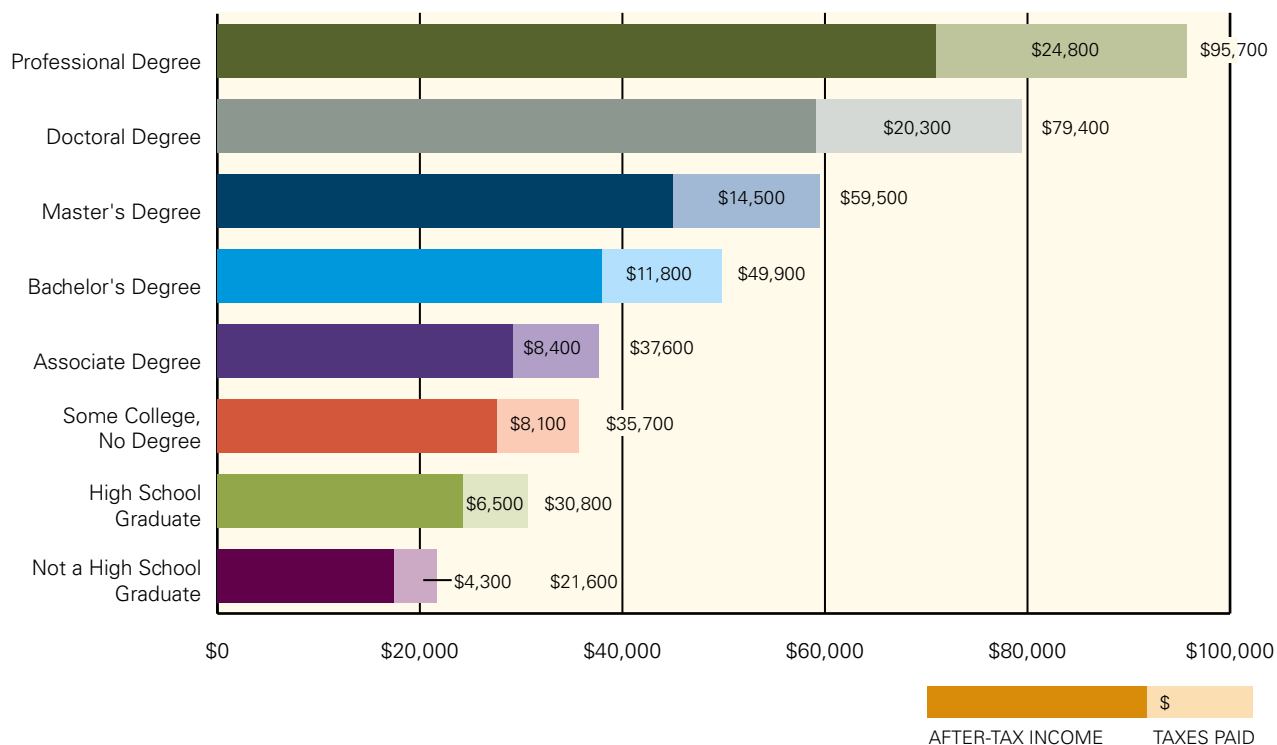
- differences in college enrollment rates by family income level
- differences in college enrollment rates by race/ethnicity
- differences in participation and degree completion by socioeconomic status, even after controlling for level of academic achievement in high school

These differences in rates of participation and success in higher education underline the importance of further investment in both academic preparation and financial aid for students in underrepresented groups.

The indicators included here confirm the conclusions of *Education Pays*. If educational opportunities were equally available to all individuals and groups, our society would be both more equitable and more efficient, enjoying more of the benefits described in these reports.

Private and Public Incomes

Figure 1: Median Earnings and Tax Payments by Level of Education, 2003



Note: Includes full-time year-round workers age 25 and older.

Sources: U.S. Census Bureau, 2004a, PINC-03; Internal Revenue Service, 2004, Table 3; McIntyre, et al., 2003; calculations by the authors.

The bars in this graph show median earnings at each level of education. The light-colored segments at the end of the bars represent the average federal, state, and local taxes paid at these income levels. The dark-colored segments show after-tax income.

The higher earnings of individuals with higher levels of education are shared with society through the payment of taxes.

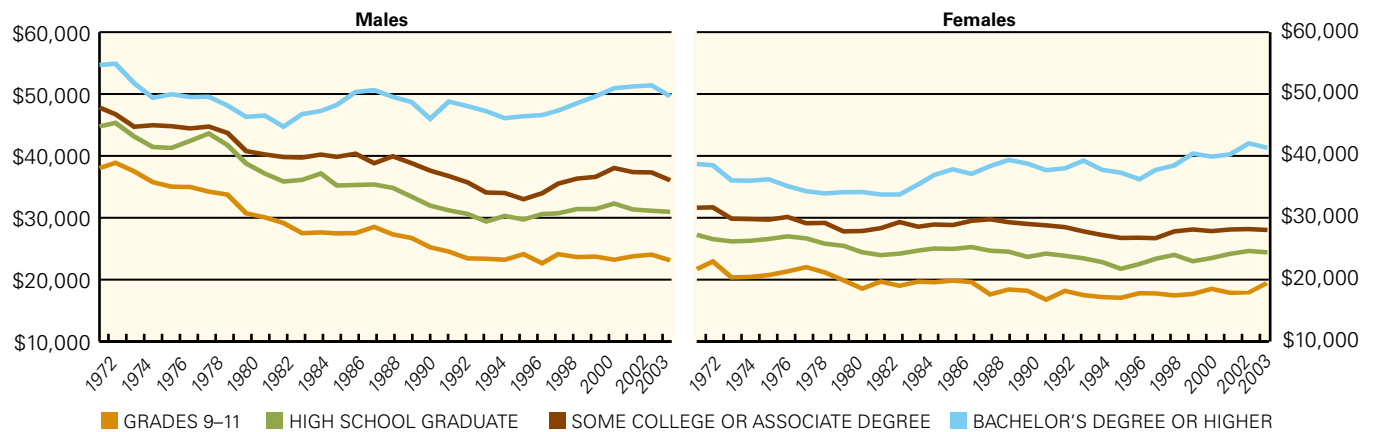
- In 2003, the typical full-time year-round worker in the United States with a four-year college degree earned \$49,900, 62 percent more than the \$30,800 earned by the typical full-time year-round worker with only a high school diploma.
- Those with master's degrees earned almost twice as much, and those with professional degrees earned over three times as much per year as high school graduates.
- The typical college graduate working full-time year-round paid over 100 percent more in federal income taxes and about 82 percent more in total federal, state, and local taxes than the typical high school graduate.
- Those who earned professional degrees paid over \$18,000 a year more in total taxes than high school graduates.

Also important:

- All of the differences in earnings reported here may not be attributable to level of education. Education credentials are correlated with a variety of other factors including, for example, parents' socioeconomic status and some personal characteristics.
- While the average high school graduate might not increase his or her earnings to the level of the average college graduate simply by earning a bachelor's degree, careful research on the subject suggests that the figures cited here do not measurably overstate the financial return of higher education. (Ashenfelter et al., 1999; Card, 1999; Deschenes, 2001)

The Increasing Importance of Higher Education

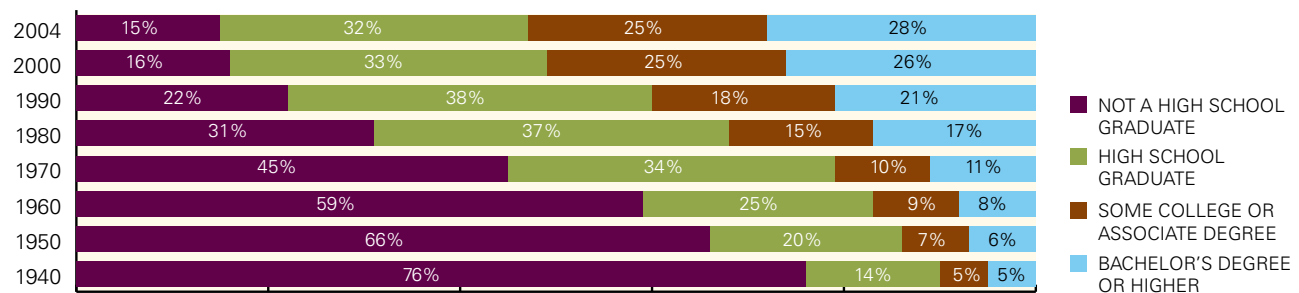
Figure 2a: Median Annual Earnings of Males and Females Ages 25–34 by Education Level, 1972–2003 (Constant 2003 Dollars)



Note: Includes full-time, full-year workers.

Sources: National Center for Education Statistics (NCES), 2005a, Indicator 14 (based on U.S. Census Bureau, *Current Population Survey*, March Supplement, 1972–2003) and unpublished data.

Figure 2b: Years of Schooling Completed by People 25 and Older, 1940–2004



Note: Percents may not sum to 100 percent due to rounding.

Source: U.S. Census Bureau, 2005, Table A-1.

The earnings differential between high school graduates and college graduates has increased significantly over time. The proportion of the population that has attended or completed college has also grown dramatically; as of the year 2000, more than half of the adults in the United States over the age of 25 had completed at least some college education.

- At the same time that the number of college graduates has grown relative to the number of adults with no college experience, the earnings gap between high school graduates and college graduates has widened considerably. In 1972, median earnings for males with bachelor's degrees or higher were 22 percent greater than median earnings for male high school graduates. The earnings premium for female college graduates was over 40 percent. In 2003, the typical male college graduate earned 60 percent more than the typical male high school graduate, while the premium for females was 69 percent.
- In 1940, only 10 percent of adults ages 25 and older had completed any education beyond high school. By 1970, that proportion had risen to 21 percent and by 2004, it reached 53 percent.
- The proportion of the adult population holding a bachelor's degree or higher increased from 5 percent in 1940 to 11 percent in 1970 and 28 percent in 2004.

Also important:

- Increases in the proportion of the workforce holding college degrees have a positive effect on the earnings of those with lower levels of education. Controlling for other differences, Moretti (2004) found that a 1 percentage point increase in the proportion of four-year college graduates in a city increases the wages of workers without a high school diploma by 1.9 percent and the wages of high school graduates by 1.6 percent.
- Unemployment rates are significantly lower for individuals with higher levels of education. In August 2005, the unemployment rate for adults 25 and older without a high school diploma was 7 percent compared to 4.5 percent for high school graduates, 3.5 percent for those with some college, and 2.4 percent for those with a bachelor's degree or higher. (Bureau of Labor Statistics, 2005, Table A-4)

Employee Benefits

Figure 3a: Percentage of Private Sector Entry-Level Workers Covered by Employer-Provided Health Insurance, by Level of Education, 1979–2002

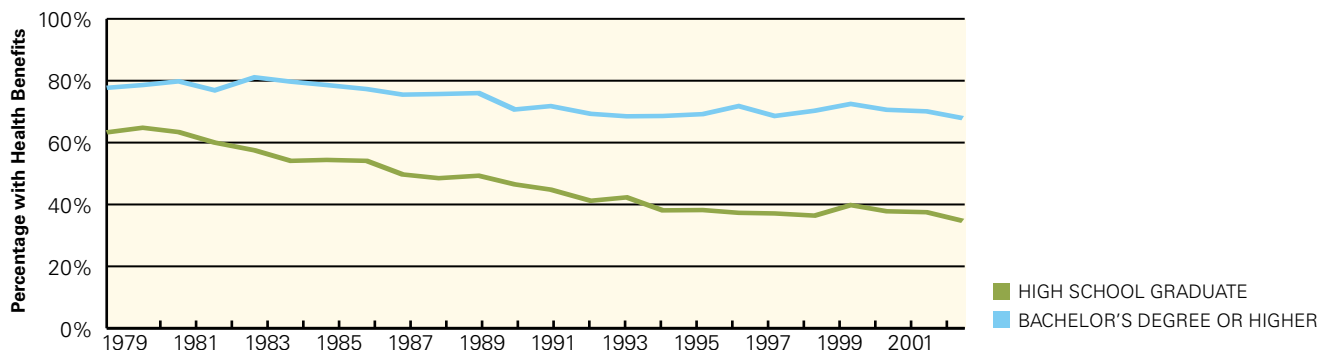
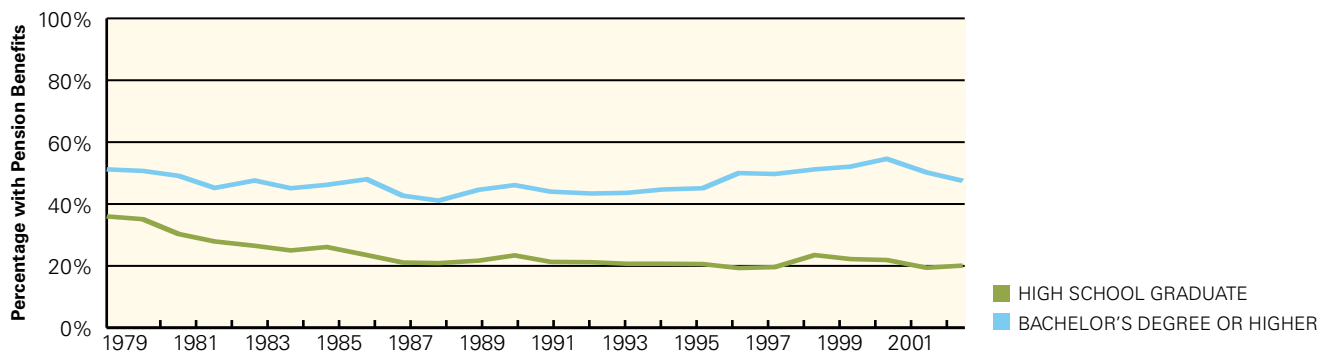


Figure 3b: Percentage of Private Sector Entry-Level Workers Covered by Employer-Provided Pension Benefits, by Level of Education, 1979–2002



Note: Entry-level workers are those with terminal high school or college degrees and one to five years of work experience. Includes individuals ages 18–64 working at least 20 hours per week. Coverage is defined as employers paying at least part of the cost.

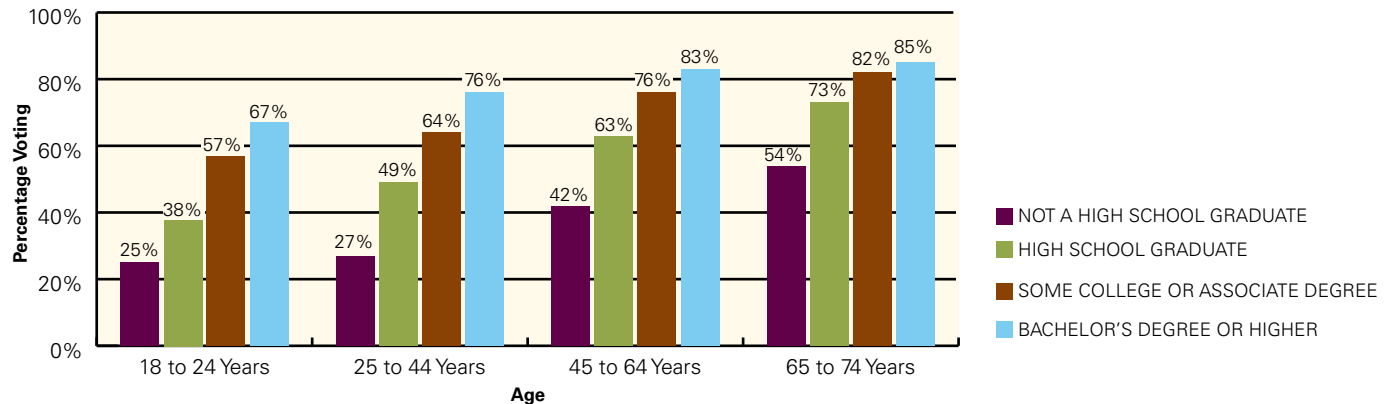
Sources: Bernstein, Mishel, and Allegretto, 2005, Table 2.14 and Table 2.15. Calculations by the Economic Policy Institute.

Among entry-level private sector employees working at least 20 hours per week, 68 percent of four-year college graduates were covered by health insurance in 2002 and 48 percent were covered by pension benefits at least partially funded by employers. Among high school graduates, only 35 percent of entry-level workers had employer-provided health insurance coverage and 20 percent had pension benefits.

- Overall health insurance coverage for private sector entry-level workers declined from 69 percent to 57 percent between 1979 and 2002. Only one-third of entry-level high school graduates enjoyed health benefits, compared to two-thirds of entry-level college graduates.
- The gap between the percentages of high school graduates and college graduates with employer-provided pension benefits widened from 15 percentage points in 1979 to 23 percentage points in 1990 and 27 percentage points in 2002.
- Among *all* private sector employees ages 18 to 64 working at least 20 hours per week, 54 percent of high school graduates and 70 percent of college graduates had health coverage. Among this same group, 41 percent of high school graduates and 60 percent of college graduates had pension coverage.

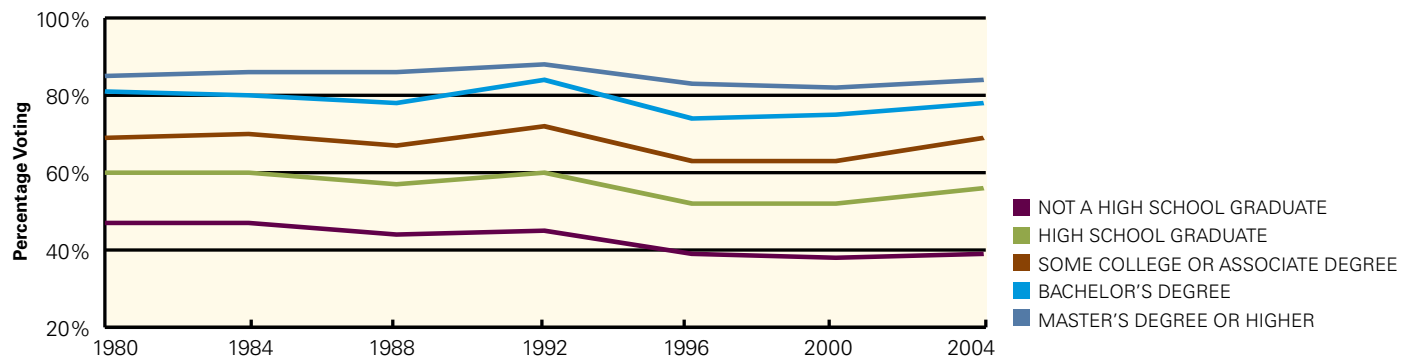
Voting

Figure 4a: Reported Voting Rates by Age and Education Level, 2004



Source: U.S. Census Bureau, 2004b, Table 5.

Figure 4b: Reported Voting Rates Over Time by Education Level, 1980–2004



Note: Based on self-reporting. Noncitizens have been removed from these data. Including noncitizens would suggest sharper declines in voting rates over time.

Sources: U.S. Census Bureau, 2004b, Table 1; U.S. Census Bureau, 2000; calculations by the authors.

In every age group, adults with higher levels of education are more likely to vote than those who have less education.

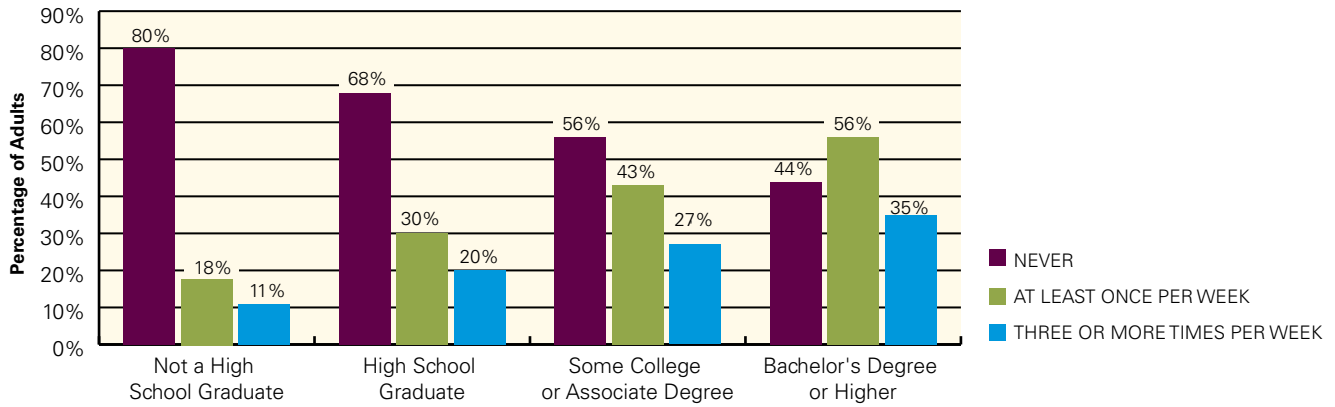
- In the 2004 presidential election, 76 percent of U.S. citizens who were college graduates between the ages of 25 and 44 reported voting, compared to 49 percent of high school graduates. Among citizens between the ages of 45 and 64, 83 percent of college graduates and 63 percent of high school graduates reported voting.
- Between 1980 and 2004, the voting rate for high school graduates declined more than the voting rate for those with higher levels of education.

Also important:

The differences in voting patterns among the college educated and others are not all attributable to education, but controlling for other characteristics, estimates suggest that even enrolling in college increases the probability of registering to vote by 18 percent and the probability of voting in a presidential election by 29 percent. (Dee, 2004)

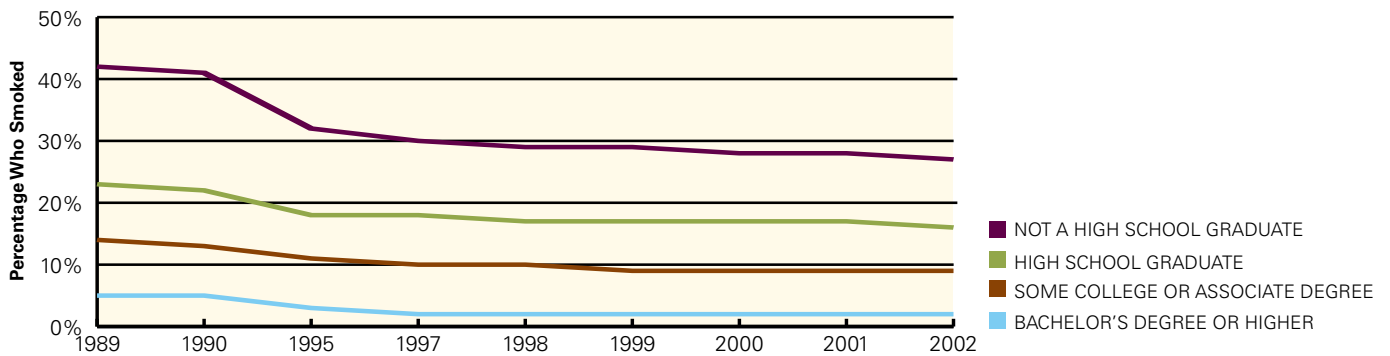
Health

Figure 5a: Percentage of Adults Over Age 25 Reporting Vigorous Physical Activity by Education Level, 2003



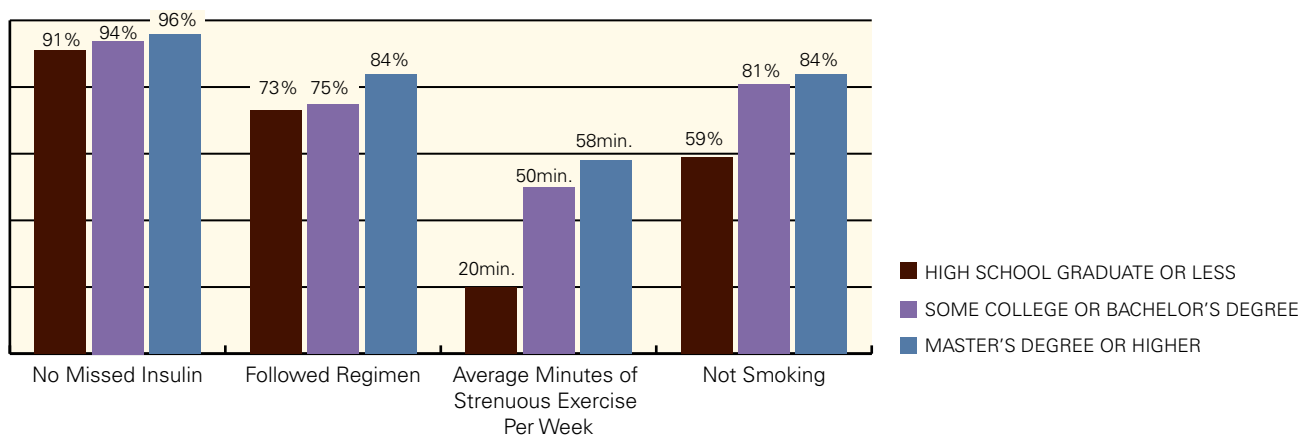
Source: Centers for Disease Control (CDC), 2005.

Figure 5b: Percentage of Mothers Age 20 and Older Who Smoked During Pregnancy, 1989–2002



Source: CDC, 2004a.

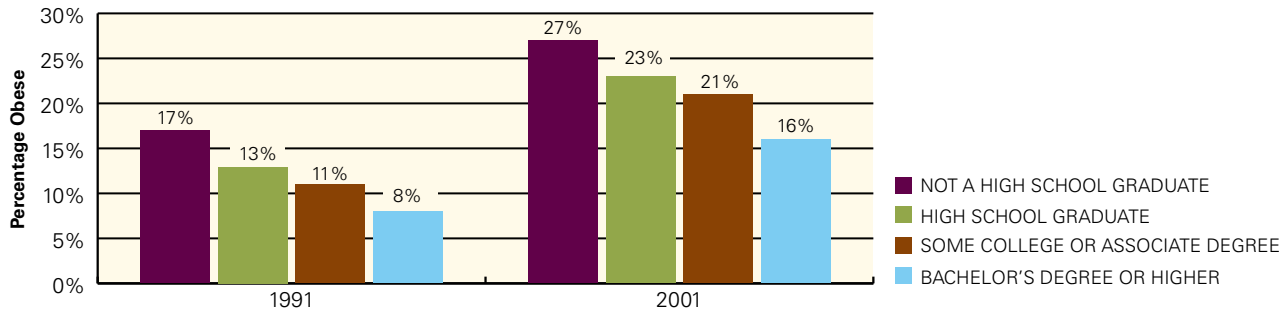
Figure 5c: Treatment Adherence of Type 1 Diabetes Patients by Education Level



Source: Goldman and Smith, 2002.

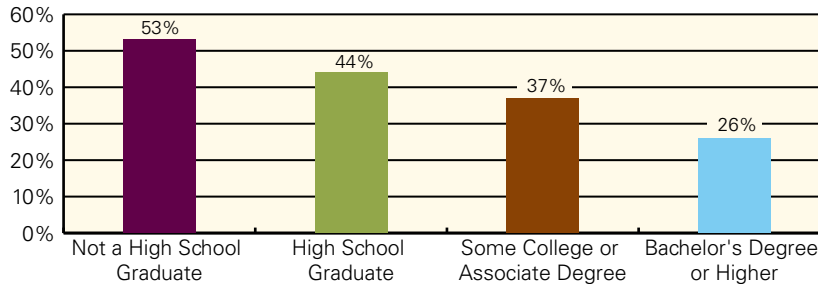
Health

Figure 5d: Obesity in Adults Age 20 and Older in the United States by Education Level, 1991 and 2001



Source: CDC, 2001, Table 5.

Figure 5e: Multiple Risk Factors for Heart Disease: Percentage with Two or More High-Risk Factors by Education Level, 2003



Note: Adults with two or more of the following: high blood pressure, high cholesterol, diabetes, obesity, current smoking, or physical inactivity.

Source: CDC, 2004b.

College graduates are more likely than other adults to engage in healthy behaviors and to enjoy good health.

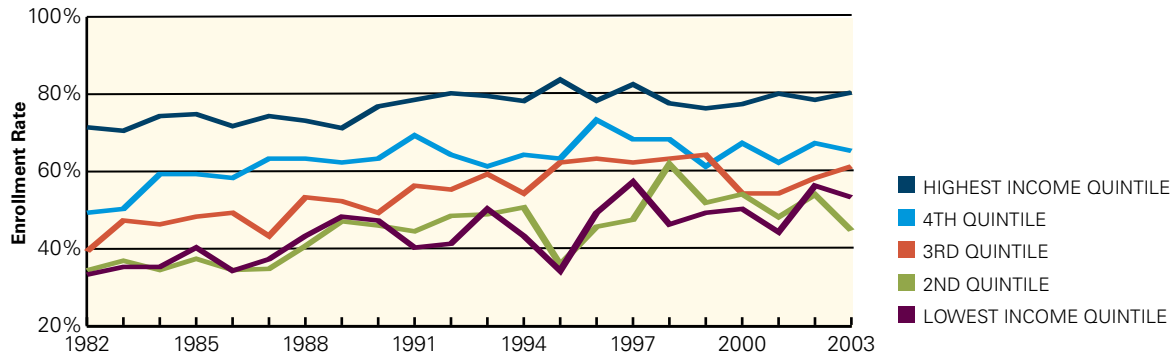
- While 35 percent of four-year college graduates and 27 percent of individuals with some college exercise at least three times a week, only 20 percent of high school graduates and 11 percent of those without a high school diploma are so physically active. Among those with a bachelor's degree, 44 percent report that they never exercise, compared to 68 percent of high school graduates.
- Among new mothers in 2002, 16 percent of high school graduates, 9 percent of those with some college, and 2 percent of college graduates smoked during pregnancy. According to the Centers for Disease Control and Prevention, smoking-attributable neonatal expenditures average about \$850 (in 2004 dollars) per maternal smoker. (CDC, 2004c)
- Studies of diabetes patients reveal that controlling for other characteristics, individuals who have attended college are significantly more likely than those who have not to follow prescribed treatments. (CDC, 2004b)
- Obesity became more common at all levels of education during the 1990s. In 2001, 23 percent of high school graduates were obese, compared to 16 percent of four-year college graduates.
- After controlling for age, multiple risk factors for heart disease and stroke are much less prevalent among individuals with a college education than among others. Twenty-six percent of four-year college graduates, 37 percent of those with some college, 44 percent of high school graduates, and 53 percent of those without a high school diploma have at least two of the risk factors of high blood pressure, high cholesterol, diabetes, obesity, current smoking, and physical inactivity. (CDC, 2004b)

Also important:

- Statistical analysis reveals that higher levels of education have a significant impact on the health of American adults even after controlling for differences in income, wealth, and race/ethnicity. Differences in access to health care explain only a fraction of the differences in health status by education level. (Smith, 2005; Ross and Wu, 1996)
- Numerous studies investigating the relationship between education and health support the idea that the skills, attitudes, and patterns of thought fostered by education lead to more responsible health-related behaviors. (Mirowsky and Ross, 2003)
- Despite the independent role of education in improving measures of health, both income and racial/ethnic differences lead to significant differences among those with similar levels of education.

Family Income and College Enrollment

Figure 6: College Enrollment Rates by Family Income Levels, 1982–2003



Note: Enrollment rates correspond to the percentage of high school completers who are enrolled in college in October of the year of high school graduation. Family income quintiles for 2003: lowest quintile = \$16,399 or less; second quintile = \$16,400–\$31,099; third quintile = \$31,100–\$48,399; fourth quintile = \$48,400–\$78,799; and highest quintile = \$78,800 and higher.

Source: NCES, unpublished tabulation using data from the *Current Population Survey*, U.S. Census Bureau, 1982–2003.

College enrollment rates are significantly lower for high school graduates from lower-income families than for those from middle- and upper-income families. The gaps in enrollment have, however, been somewhat smaller since 1998 than they were over the preceding 20 years.

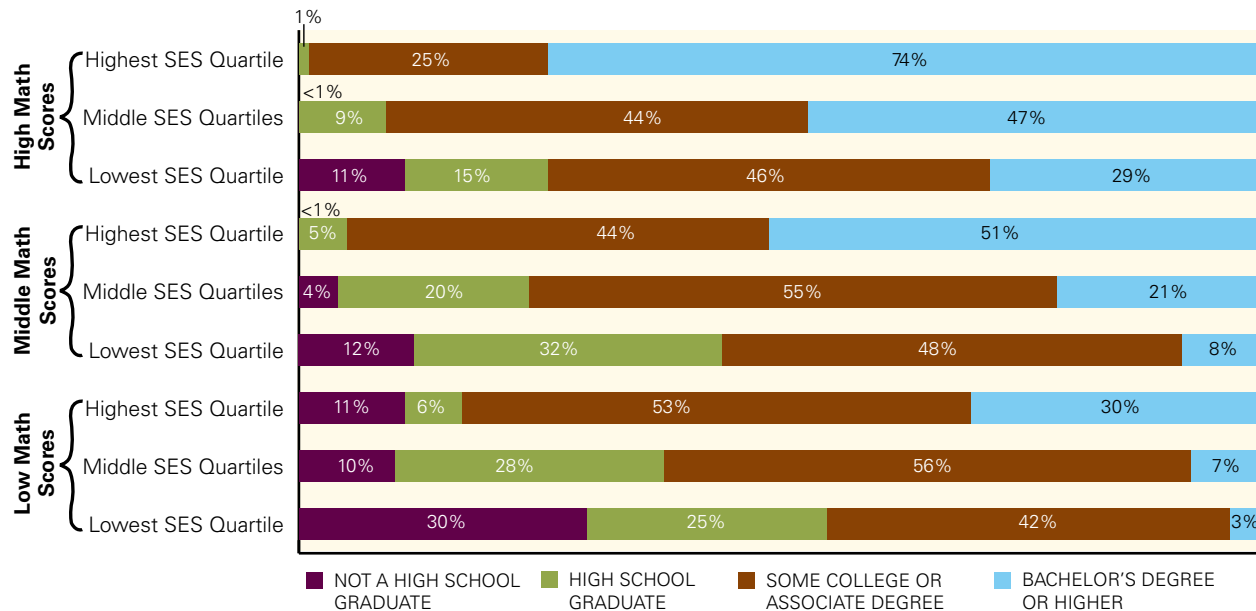
- In 2003, 80 percent of students from families with incomes in the upper 20 percent (above \$78,800), 65 percent of those from the second highest quintile, and 61 percent of those from the middle-income quintile enrolled in college immediately after high school.
- Only 49 percent of the 2003 high school graduates from the lowest 40 percent of the family income distribution enrolled in college immediately. The enrollment rate was slightly higher in the lowest quintile than in the second lowest quintile.
- Enrollment rates at all income levels peaked between 1995 and 1999 and have been lower in more recent years.
- The gaps between the enrollment rate of high school graduates from the most affluent families and those from less affluent families have declined over time. For example, the 36 percentage point gap between the enrollment rate of the highest and the lowest income students in 1983 declined to 29 percentage points in 1993 and to 27 percentage points in 2003.

Also important:

The college enrollment rates cited here are based only on individuals who have graduated from high school. Students from low-income families are significantly less likely than those from more affluent families to reach this point. In the year ending in October 2001, 11 percent of tenth- to twelfth-graders from the 20 percent of families with the lowest incomes left high school without a diploma. Five percent of middle-income high school students and 2 percent of those from the highest income quintile dropped out. (NCES, 2005b, Indicator 19)

Socioeconomic Status, Math Test Scores, and Level of Education

Figure 7: Highest Level of Education in 2000 by Math Test Scores and Socioeconomic Status in High School (High School Class of 1992)



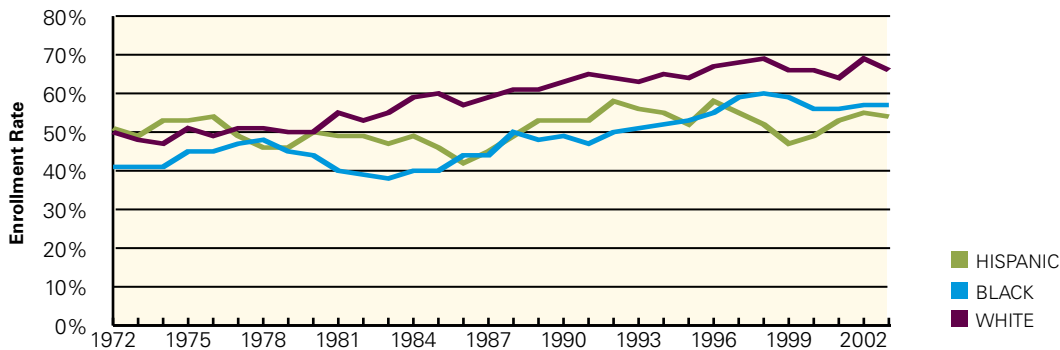
Note: Data are based on 1988 eighth-graders. Socioeconomic status is based on family income and the education level and occupations of parents when the students are in eighth grade.
Source: NCES, 2005c.

Even among those students with very high test scores, high school graduation, college enrollment, and bachelor's degree completion rates are significantly lower for those from lower socioeconomic backgrounds.

- Within all socioeconomic groups, students who earn high mathematics test scores in eighth grade are significantly more likely to graduate from high school, enroll in college, and earn bachelor's degrees than those with lower levels of achievement.
- Eight years after their scheduled high school graduation date, 75 percent of the 1988 eighth-graders who were high math achievers from the lowest socioeconomic background had enrolled in college, but only 29 percent had earned bachelor's degrees.
- Among the students from the highest socioeconomic quartile with similar high levels of achievement in mathematics in eighth grade, 99 percent had enrolled in college and 74 percent had earned bachelor's degrees by the year 2000.
- Among the students from the middle socioeconomic quartiles with similar high levels of achievement in mathematics in eighth grade, 91 percent had enrolled in college and 47 percent had earned bachelor's degrees by the year 2000.

College Enrollment Rates by Race/Ethnicity

Figure 8: Postsecondary Enrollment of Recent High School Graduates by Race/Ethnicity, 1972–2003



Note: Based on 18- to 24-year-olds who have graduated from high school within the past 12 months. Averages for blacks and Hispanics are based on three-year moving averages.

Source: NCES, 2005d, Table 20-1.

About 66 percent of white high school graduates enroll in college within a year after completing high school. Only 57 percent of black high school graduates and 52 percent of Hispanic high school graduates follow this path.

- In the early 1970s, Hispanic high school graduates were slightly more likely than white high school graduates to enroll in college immediately after high school. This pattern reversed itself dramatically in the early 1980s and, in 1986, the proportion of Hispanic graduates who enrolled in college was 15 percentage points lower than the proportion of white graduates who enrolled. After narrowing to 6 percentage points in 1992, the white/Hispanic gap peaked at 19 percentage points in 1999 and has since declined to 13 percentage points.
- The difference between the immediate college enrollment rates of white and black high school graduates widened from an average of 5 percentage points in the 1970s to a peak of 21 percentage points in 1985. This gap has declined gradually and has averaged 10 percentage points since the year 2000.

Also important:

Because high school graduation rates are lower for blacks and Hispanics than for whites and Asian/Pacific Islanders, the differences in college enrollment rates by race/ethnicity are higher for the entire age group than they are for the high school graduates reported on here. In 2002, 4 percent of Asian/Pacific Islanders, 7 percent of whites, and 11 percent of blacks between the ages of 16 and 24 were not enrolled in high school and lacked a high school credential. Forty-one percent of Hispanics in this age range who were born outside the United States, 14 percent of first-generation Hispanic Americans, and 11 percent of Hispanics in this age range whose parents were both born in the United States were neither high school students nor high school graduates. (NCES, 2005b, Indicator 19)

References

- Ashenfelter, O., Harmon, C., and Oosterbeek, H. (1999). A Review of Estimates of the Schooling/Earnings Relationship with Tests for Publication Bias. *Labour Economics* 6:453–70.
- Bureau of Labor Statistics (2005). Labor Force Statistics from the *Current Population Survey*. <http://www.bls.gov/webapps/legacy/cpsatab4.htm>.
- Bureau of Labor Statistics (2005a). Labor Force Statistics from the *Current Population Survey*. <http://www.bls.gov/cps/cpsaat7.pdf>.
- Bureau of Labor Statistics (2005b). Labor Force Statistics from the *Current Population Survey*. <http://www.bls.gov/webapps/legacy/cpsatab4.htm>.
- Card, D. (1999). The Causal Effect of Education on Earnings. O. Ashenfelter and D. Card, eds. *Handbook of Labor Economics* 3A. New York: Elsevier Science.
- Centers for Disease Control (2001). Obesity in the U.S. Fact Sheet. http://www.obesity.org/subs/fastfacts/obesity_US.shtml.
- Centers for Disease Control (2004a). Smoking During Pregnancy, United States 1990–2002. *Morbidity and Mortality Weekly Report* October 8. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5339a1.htm>.
- Centers for Disease Control (2004b). Declining Prevalence of No Known Major Risk Factors for Heart Disease and Stroke Among Adults—United States, 1991–2001. *Morbidity and Mortality Weekly Report* January 16.
- Centers for Disease Control (2004c). State Estimates of Neonatal Health-Care Costs Associated with Maternal Smoking, 1996. *Morbidity and Mortality Weekly Report* October 8, 2004.
- Centers for Disease Control (2005). *Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2003*. http://www.cdc.gov/nchs/data/series/sr_10/sr10_225.pdf.
- Dee, T. (2004). Are There Civic Returns to Education? *Journal of Public Economics* 88:1697–1720.
- Deschenes, O. (2001). Unobserved Ability, Comparative Advantage, and the Rising Return to Education in the United States, 1979–2000. U.C. Santa Barbara Working Paper #1043.
- Goldman, D. P., and Smith, J. P. (2002). Can Patient Self-Management Help Explain the SES Health Gradient? RAND Corporation. PNAS 99:16.
- Internal Revenue Service (2004). *Statistics of Income 2001–2003*.
- McIntyre, R., Francis, N., Gardner, M., Gomaa, W., Hsu, F., and Sims, R. (2003). *Who Pays? A Distributional Analysis of the Tax Systems of All Fifty States*, 2nd edition. Washington: Institute on Taxation and Economic Policy. <http://www.itepnet.org/wp2000/text/pdf>.
- Mirowsky, J., and Ross, C. (2003). *Education, Social Status, and Health*. Somerset, NJ: Aldine de Gruyter/Transaction Publishing.
- Mishel, L., Bernstein, J., and Allegretto, S. (2005). *The State of Working America 2004/2005*. Ithaca, NY: Cornell University Press.
- Moretti, E. (2004). Estimating the Social Return to Higher Education: Evidence from Longitudinal and Repeated Cross-Sectional Data. *Journal of Econometrics* 121:175–212.
- National Center for Education Statistics (2005a). *The Condition of Education, 2005*. <http://nces.ed.gov/programs/coe/2005/section2/indicator14.asp#info>.
- National Center for Education Statistics (2005b). *The Condition of Education, 2005*. <http://nces.ed.gov/programs/coe/2005/section3/indicator19.asp>.
- National Center for Education Statistics (2005c). *Youth Indicators, 2005: Trends in the Well-Being of American Youth*. <http://nces.ed.gov/pubsearch/pubinfo.asp?pubid=2005050>.
- National Center for Education Statistics (2005d). *The Condition of Education, 2005*. <http://nces.ed.gov/programs/coe/2005/section3/indicator20.asp#info>.
- National Center for Education Statistics. Unpublished tabulation using data from the *Current Population Survey*. U.S. Census Bureau, 1982–2003.
- Ross, C. E., and Wu, C. L. (1996). Education, Age, and the Cumulative Advantage in Health. *Journal of Health and Social Behavior* 37(1):104–20;
- Smith, J. P. (2005). Unraveling the SES–Health Connection. *Aging, Health, and Public Policy: Demographic and Economic Perspectives*, a supplement to *Population and Development Review* 30. New York: Population Council.
- U.S. Census Bureau (2000). *Historical Voting and Registration Reports. Current Population Survey*. <http://www.census.gov/population/www/socdemo/voting/past-voting.html#cps>.
- U.S. Census Bureau (2004a). *Annual Social and Economic Supplement. Current Population Reports*. http://ferret.bls.census.gov/macro/032004/perinc/new03_000.htm.
- U.S. Census Bureau (2004b). *Voting and Registration in the Election of November 2004*. <http://www.census.gov/population/www/socdemo/voting/cps2004.html>.
- U.S. Census Bureau (2005). *Years of Schooling by People 25 and Over. Current Population Survey*. <http://www.census.gov/population/socdemo/education/tabA-1.xls>.

Acknowledgments

Sandy Baum and Kathleen Payea compiled this publication with the valuable assistance of Patricia Steele. The report would not have been possible without the cooperation of the researchers who generously provided us with their work. We also appreciate the help and support of Tom Rudin, Sally Mitchell, and Micah Haskell-Hoehl in the Washington Office of the College Board; Andre Bell and Kathleen Little of the College and University Enrollment Services Division; Jeff Hale in Grants Planning and Management; and the staff of the Creative Services and Public Affairs Divisions in New York.

Contact information for authors

sbaum@collegeboard.org

kpayea@collegeboard.org

The Washington Office of the College Board conducts research relevant to public policy issues in education. The office is located at 1233 20th Street NW, Suite 600, Washington, DC 20036-2375. Phone: 202 741-4700.

The College Board: Connecting Students to College Success

The College Board is a not-for-profit membership association whose mission is to connect students to college success and opportunity. Founded in 1900, the association is composed of more than 4,700 schools, colleges, universities, and other educational organizations. Each year, the College Board serves over three and a half million students and their parents, 23,000 high schools, and 3,500 colleges through major programs and services in college admissions, guidance, assessment, financial aid, enrollment, and teaching and learning. Among its best-known programs are the SAT®, the PSAT/NMSQT®, and the Advanced Placement Program® (AP®). The College Board is committed to the principles of excellence and equity, and that commitment is embodied in all of its programs, services, activities, and concerns.

For further information, visit www.collegeboard.com.

An electronic copy of this report, along with the other reports of the Trends in Higher Education series and additional data tables, can be downloaded at www.collegeboard.com/trends.

© 2005 The College Board. All rights reserved. Advanced Placement Program, AP, College Board, SAT, and the acorn logo are registered trademarks of the College Board. Connect to college success is a trademark owned by the College Board. PSAT/NMSQT is a registered trademark of the College Board and National Merit Scholarship Corporation. All other products and services may be trademarks of their respective owners. Visit the College Board on the Web: www.collegeboard.com.