Implications of Educational Inequality for the Future Workforce

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Introduction

Education is a fundamental basis of productivity growth. Not only are educated workers more productive, but technological change that generates productivity is dependent on the availability of an educated workforce, both for the scientists and engineers that directly generate those innovations, but also for the many related occupations that support innovative work and that create the economic and technical infrastructure on which innovation is based. In the past, the US education system has produced an educated workforce adequate to maintain a relatively high level of productivity growth, and at least the higher education system was considered the best in the world. Certainly the education system has always been highly inequitable in the sense that educational achievement was closely related to race, ethnicity, and socioeconomic status. I argue in this paper that economic, political, social, and demographic factors are changing in such a way that in the future, the traditional educational inequality in the United States is going to increasingly stand in the way of the ability to sustain productivity growth and to compete successfully in international markets. In the past, educational inequality was a problem primarily for those individuals who ended up with low levels of education; increasingly it will be a problem for everyone.

The first section of the paper provides background on past discussions about the relationship between education and productivity. I then discuss in particular the current political and economic environment as it relates to the development and expansion of higher education. The K-12 system provides the educational foundation of the system, but the growth in productivity increasingly depends on the reach and quality of the higher

education system. Next I discuss the growing racial and ethnic heterogeneity of the population and describe differences in educational attainment for different population groups. Finally, I report on forecasts of future overall educational levels based on Census Department population growth projections.

Education, Economic Growth, and Productivity

Reformers have linked education and economic growth for many years, predicting economic problems resulting from inadequate education. In the 1980s, education reform was motivated by a concern that the United States was falling behind some other advanced countries in our educational achievement and that this spelled trouble for the country's international competitiveness. The most famous example of this was the *Nation at Risk* report that raised alarms about the failing international competitiveness of the country resulting from a scandalously deficient education system. Many of these fears seemed to be realized in the late 1980s as Japan and Germany, and to some extent other growing Asian countries, appeared to present formidable economic competition, especially in the manufacturing sector. The focus of education reform during that decade was on elementary and high school education. Much less attention was paid to the higher education system. Indeed, it was widely believed that the US university system was unchallenged, the best in the world. The potential economic problems lay with the middle levels of the occupational system, not the highest. Japan and Germany were believed to do a much better job training the middle section of the skills distribution—the technical level and skilled workers that formed the backbone of the advanced manufacturing sectors that appeared to be so successful. The German apprenticeship

system and the extensive Japanese on-the job training system spread up-to-date sophisticated skills throughout the large center section of the skills distribution. Reports on the US emphasized the declining quality of occupational and vocational training and the low level of private-sector investment in incumbent worker training. The conventional wisdom was that the United States continued to generate the innovations and produce a highly skilled high-level workforce, but other countries, particularly Japan, relying on a broader base of middle-level skills, excelled at the application and development of those innovations. (See for example, National Center on Education and the Economy, 1990).

The economic boom of the 1990s coupled with the economic troubles experienced by Japan and Germany washed away much of the anxiety about competition from those countries by the middle to the late years of the decade. It was difficult to argue that the economic success of the country in the 1990s had been a product of reforms generated by the educational anxiety of the 1980s. Elementary students who might have benefited from the standards-based reform movement of that decade would hardly have entered the labor force by the time the boom flourished. The federal level reforms, such as the School-to-Work Opportunity Act or the National Skill Standards Board were not even enacted until the middle of the decade, and in the end, did not amount to much. By the middle of the current decade, these federal level reforms have disappeared. But the passage of the No Child Left Behind Act made clear the continuing perception of failure in the K-12 system, despite the reforms of the previous decades.

Although changes in the quality of education may not provide a good explanation of short or medium term fluctuations in the relative performance of different countries,

there is a great deal of evidence about the relationship between education and economic growth, and the labor market value of education. Moreover, evidence suggests that that relationship is growing stronger. Thus a recent analysis of the link between education and growth by Young, Levy, and Higgins (2004) using county-level data for the US, found, not surprisingly, that the percentage of the population with less than a high school degree was negatively related to growth and that the percentage of the population with a high school degree, and with at least a BA, was positively related to growth. Goldin and Katz (2001) argued that historically, the US international economic leadership was closely related to its huge lead in educational attainment. Changes in education had a particularly strong effect on economic productivity and growth in periods of rapid educational growth—during the "high school movement" between 1915 and 1940 and between 1960 and 1980 during the period of mass higher education. Productivity growth due to education has slowed since 1980 partly because of the slowdown in growth of educational attainment, particularly for men.

The economic growth literature analyzes the overall relationship between education and growth. Wage analyses over the last two decades have consistently shown a growing earnings premium for postsecondary education, particularly for bachelor's and professional degrees (Chart 1). This trend has continued despite increases in the relative numbers of students who have earned a BA. There is suggestive evidence that even within the postsecondary sector, the economic value of the difference between a BA and an Associates degree, or even more, the category "some college," has grown. Research using the High School and Beyond sample, from the 1980s, and the NELS sample, from the 1990s, has revealed strong and large returns to earning a BA, both for men and

women. Kain (2004) argues that although higher education enrollments have grown in the last decades, this growth has been below the level that would have been expected given the increasing economic value of a college degree. From an economic perspective, this suggests that there is an under-investment in education. The cause of this is difficult to determine. Kain suggests that there is some, although not definitive, evidence that the inability of low-income families to get financing for their education (capital constraint) may be at fault. Poor quality K-12 education and various social problems faced by many students also prevent them from enrolling in and completing college despite the potential economic benefits. But whatever the reason, these data suggest that as a whole, the economy would benefit from more postsecondary education.

The implications of both technological change and growing international competition from increasingly educated foreign workforces were that, in the future, the overall strength of the economy would be based on work that involves more advanced skills. Levy and Murnane (2004), in their book on the effects of globalization and computerization on required skills, divided skills into five broad categories: expert thinking, complex communication, routine cognitive tasks, routine manual tasks, and non-routine manual tasks. Based on their categorization of occupations, they conclude that over the last 30 years, the use of expert thinking and complex communication have grown, while the other lower skilled functions have all declined. Certainly, many low-skilled jobs remain, yet increasingly the individual well-being as well as collective economic progress will be based on the types of skills that higher education, at least in principle, is designed to teach.

Thus, in the early 21st century, concerns about the effect of inadequate education on the international economic position of the country have returned as the boom of the late 1990s collapsed, as trade deficits have grown, and as China, India, and other Asian countries have emerged as potential competitors in higher-level technical occupations. In contrast to concerns about the education and the workforce in earlier decades, current anxiety is based in the fear that other countries now threaten US competitiveness at the higher levels of the occupational structure. Given the size of the populations in these countries, they potentially produce many more highly educated engineers and technicians than the US. And the perception is that the quality of their engineering and technical education is growing rapidly. In the future, international competitiveness, according to this argument, will flow from imagination, innovation, and increased entrepreneurial activity based on a foundation of high skills and technical competence. If, in the 1980s, it was the multi-skilled German apprentice graduate or the continuously trained Toyota worker that appeared to threaten the international US economic position, in the new century it is the Indian software engineer and Chinese entrepreneur.

Developments in US Postsecondary Education

Over the last fifty years, the United States has been the clear international leader in the share of its population enrolled in higher education. Its research universities have also been recognized as the most effective in the world for educating a high level workforce and generating innovations and scientific breakthroughs. US higher education has been a successful export industry and has attracted the best students, professors, and researchers in the world.

But in some areas, this dominance is weakening. The US has lost its lead in terms of the share of its young population that had completed college. By 2003, according to the Organization for Economic Cooperation and Development (2005), the share of the 25-34 year old populations that had "competed tertiary education" in Sweden, Japan, Korea, New Zealand, Norway, Finland, and Canada exceeded that share in the US. Australia, Spain, Ireland, France, Belgium were within a couple of percentage points. Educational attainment in most of these countries had grown faster than in the US.

Moreover, many analysts have begun to question the quality of American higher education. The authors of a recent book titled *Declining by Degrees* (Hirsh & Merrow, 2005) argued that the quality of US higher education was significantly overrated. While this work acknowledges that there are some excellent institutions, the authors (and the accompanying documentary of the same name that aired on the Public Broadcasting System in the summer of 2005) portrayed a very negative picture of public higher education (that is the types of institutions attended by over three quarters of all college students). The institutions they described had large classes, underpaid and overworked professors who have little time to work closely with their students, and disaffected students, many of whom are apparently more interested in partying than serious study, while others are overwhelmed by their family commitments and their need to work to support themselves while they are studying. Although higher education supporters have long hailed the open door policy of many colleges and have emphasized the growth in enrollments, more recently much more attention has been paid to college completion rates, and here the data are much less impressive. Indeed, the growth in enrollments over the last decades has not been matched by an equivalent growth in graduation (Turner,

2004). Thus, community colleges enroll close to half of all college students, yet according to data from NELS, less than half of those who initially enroll in a community college earn any degree or certificate within eight years of high school graduation. And while the elite selective colleges may graduate 90 percent of their students within six years of enrollment, according to data from the National Center for Education Statistics, many non-flagship public four-year institutions have six-year graduation rates well below 50 percent.

All of these developments have been taking place at a time of significant pressure on higher education financing. Total public sector appropriations for higher education doubled from $31 billion (in 2000 dollars) in 1970 to $64 billion in 2001. But appropriations per student, which were at $5409 in 2001, had fluctuated between $4500 and $5400 since 1970 ($5227 in 1970). Appropriations per GDP rose from .66 percent in 1970 to .79 in 1976 and fell to .64 percent in 2001 (U.S. Department of Education, 2005, pp. 200-201). State appropriations have been under particular pressure since 2001 as states have faced severe drops in revenues. Thus state appropriations for higher education per $1000 of personal income fell from $7.81 in 2001 to $6.91 in 2005. The most dramatic change in higher education funding over the last 35 years, though, has been in the share of total costs borne by students and their families. In 1970, tuition and fees were one quarter of government appropriations, but by 2001 that ratio had risen to one half. Income from grants, contracts, endowment, and gifts had also risen, although these sources were skewed towards the elite and more selective universities and colleges. Public investment in higher education remains substantial, but the boom of the late 1990s obscured the declining share of state budgets devoted to higher education. In general,

students and their families are paying a larger share of the costs of college. Tuition has grown steadily, even at community colleges, and accounts for a larger share of a typical family budget.

Over the past decades, the US higher education system and indeed the country's labor force have benefited from the enrollment of hundreds of thousands of international students. These students have generated income for the colleges (many pay full tuition) and have helped sustain many graduate programs, especially technical and scientific programs. Moreover, many have stayed in the US after graduation, adding to the educated workforce. But developments here and abroad, including post 9-11 restrictions on foreign students, sharp increases in tuition, and increases in the quantity and quality of postsecondary education in other countries led to the a 2.4 percent decline in enrollment of foreign students in US institutions of higher education in the 2003/2004 academic year. This was the first such decline since the 1971/72 academic year. (Institute on International Education, 2004). According to the Institute on International Education, "Undergraduate enrollments declined by almost 5%, with undergraduate enrollments decreasing from each of the top 5 sending countries (China -20%, India -9%, Japan -14%, Korea -1%, and Canada -3%)." Overall, graduate enrollments of foreign students did grow, but enrollments at larger research doctoral institutions, that enroll 70 percent of the foreign graduate students, showed a slight decrease of .4 percent.

These developments expose the significant challenges facing the US in the development of its workforce over the next decade. Evidence on the importance of high-level education to economic growth, research on the large and growing wage premium for a college education, and projections of the types of skills that will be increasingly

needed, all point to the increasing demand for a college-educated workforce. Moreover, we see growing competition from abroad for high-skilled work, not just low-wage, unskilled jobs. At the same time, the US has lost its traditional lead in the share of its population with postsecondary education. More countries are close behind and gaining. Finally, in addition to these numerical issues, analysts are beginning to question the quality of US higher education at the same time that the public sector is reducing its commitment to the sector. The share of state budgets devoted to college, and the public expenditure per student have both declined. The share of college revenues that comes from students and their families has risen over the last decade, and slow economic growth, strong resistance to increased taxation, growing demands on state budgets, especially from medical expenses, and ballooning federal deficits all suggest that it will be difficult to increase the public investment in higher education. In many states, preventing further decline would be considered a positive outcome for the sector.

Inequality in Higher Education in the United States

As the country confronts the need to strengthen and expand its higher education, where are the students going to come from if we have less access than in the past to highly educated workers and students from abroad? To begin with, the baby boom is beginning to retire, which will result in the loss of millions of college-educated workers. Certainly there are many students in the country who never enter college, and these are one potential source. According to the National Education Longitudinal Survey, about one-seventh of the students who were in 8th grade in 1988 had not earned a high school degree or GED by the 2000. Another 12 percent had never earned any postsecondary

credits. Moreover, many students graduate from high school not prepared to be successful in college. Since they often do not have adequate academic skills, many students must enroll in remedial education once they try to start college. Others arrive at college with little idea about what will be expected of them or what they need to do to manage their college careers. These deficiencies are to be found much more among low-income and minority students than among higher-income, white students. Strengthened high school academic preparation and programs to facilitate the transition into college are obvious responses to these problems.

Not surprisingly, entrance into and achievement in college is closely related to income and race. Chart 2, which is based on the National Educational Longitudinal Study (NELS) of a representative sample of students who were 8th graders in 1988, displays high school outcomes and postsecondary educational enrollments for the four socio-economic status (SES) quartiles.[1] By 2000, almost one fifth of the lowest SES group had not finished high school; another quarter had completed high school, some with General Equivalency Degrees (GEDs), but had not completed any postsecondary credits. Only about 15 percent had earned credits at a four-year institution. In contrast, 95 percent of the highest SES group graduated from high school and earned postsecondary credits, the large majority in four-year colleges. Moreover, over the last twenty years, the differences in college enrollment between high and low income students have grown (Kain, 2004). Certainly, there is great potential for expanding the high-level workforce by expanding educational opportunities for low-income students.

[1] This uses an SES measure derived by the National Center for Education Statistics that combines family income and parental occupation and education.

Table 1 shows differences in postsecondary enrollments and outcomes by race and gender. It is based on all of the students in the NELS sample who made it to 12th grade. Eighty percent of the white students in the sample earned at least one college credit by 2000, while only about 70 percent of Hispanic and African American students achieved that. The gaps between white and other students grew for students who have accumulated at least 10 credits and those who have enrolled in a BA granting institution. Finally, while almost 40 percent of the white students who had reached 12th grade had received a BA by 2000, less than half that percentage (17 percent) of the Hispanics and 21 percent of the African Americans had earned a BA.

Moreover, these gaps have grown, not shrunk. According to the best longitudinal data available from the National Center for Education Statistics, among the high school seniors in the class of 1972, 47 percent of blacks, 47 percent of Hispanics, and 58 percent of whites enrolled in at least one institution of higher education within 8.5 years of their senior year in high school. Two decades later, all groups of seniors in the high school class of 1992 had made substantial gains. The black college enrollment rate had increased by 23 percentage points to 70 percent, the Hispanic rate by the same amount, also to 70 percent, and the white rate by 21 percentage points to 79 percent. In absolute percentages, the gap was about the same, but the college enrollment rate had risen for all groups.

But if we examine the number of seniors from these classes who earned at least 10 credits, then the progress for blacks and Hispanics was less, and the gaps between these groups and whites in actual percentage points grew. Although progress has been made by all groups in enrollment in BA-granting institutions, gains by whites

significantly exceed those by blacks and Hispanics. Fifty-five percent of the white seniors in the class of 1992 had earned at least 10 credits and had earned some credits from a BA-granting institution, while only 37 percent of the black students in the class and 33 percent of the Hispanic students had. Thus, by 1992, blacks had achieved rates equivalent to the white rates in 1972. Hispanic students were still enrolling in BA institutions at rates below levels that whites had achieved two decades earlier (U.S. Department of Education, 2005, p. 159).

Thus, black and Hispanic students are less likely to get to 12th grade; if they do they are less likely to enroll in college; and if they do enroll, they are less likely to earn 10 credits. Moreover, they are less likely to enroll in a BA-granting institution, and if they do, they are less likely to complete a degree. For the most part, there has been little or no progress in closing the various postsecondary components of these gaps in this educational pipeline. Some relative progress has been made in getting blacks and Hispanics into college, but the gaps between groups in post-enrollment success have not declined. Indeed, the overall gaps between Hispanics, blacks, and whites in BA attainment have clearly grown. Twenty percent of the white seniors in the class of 1972 earned a BA within 8.5 years while 39 percent from the class of 1992 did. The equivalent numbers for the other groups were 12 and 21 percent for blacks and 9 and 16 percent for Hispanics. In terms of BA attainment, by the 1990s, blacks and particularly Hispanics were still well behind where whites had been in 1972.

These longitudinal data are particularly revealing since they show the problems at each junction of the educational pipeline. Chart 3 displays cross-section data which show similar trends. According to the US Census, in 2000, about 32 percent of the white 25-

34-year-old population had a BA, and 16 percent of the African American and 11 percent of the Hispanic population in that age range had BAs. For all three of these groups, these BA-holding rates for women were about 2 percentage points higher than those for men. Comparing 1990 and 2000, the percentage point gap in the 25-34-year-old population BA attainment rate between whites on the one hand, and blacks and Hispanics on the other, grew for the populations as a whole and for each gender/race-ethnicity group. The share of the young Hispanic male population that had a BA or at least an associate degree actually fell. In 1990, less than 10 percent of the young adult Hispanic males living in the US had a BA (Kelly, 2005).

Forecasts of Overall Levels of Educational Attainment

Given these growing gaps, demographic trends will make it difficult to increase overall educational attainment in the country. The US population is growing increasingly heterogeneous. Several of the largest states in the country are becoming majority minority. Hispanic populations in particular are growing. The Census Bureau projects a 77 percent increase for the Hispanic population, a 32 percent increase in the African American, a 69 percent increase in the Asian population and less than one percent increase in the white population. These patterns present a mixed picture. The group with the lowest overall level of education (Hispanics) is growing the fastest, although the growth rate for Asians, the group with the highest level of education, is right behind the rate for Hispanics. But overall, Hispanics and African Americans will account for over 30 percent of the population in 2020 while the Asian share will still be about 6 percent.

Kelly (2005) used Census Bureau data and projections to calculate future overall educational levels. He took the educational levels for the 25-64 year olds from each group in 2000 and the Census Bureau population projections through 2020. The results are displayed in Chart 4. These calculations suggest that the share of the population with less than a high school degree would *increase* from 16.1 to 18.5 percent. The population share of all of the other educational levels would fall slightly to make up for this 2.4 percentage point increase in the high school dropout population. Calculations using 25-34 year olds reached similar conclusions. Unless the educational level of African Americans and Hispanics can be raised, over the next twenty years, when the economy will require an increasing number of workers with skills learned in college, the country will experience a significant growth in the population that has not even graduated from high school.

Of course these are projections that assume that the current distribution of education will remain the same. What factors might either alter the overall population projections or change the distribution of education within groups such that these projections would underestimate the changes in educational attainment?

On the one hand, the growth of the Asian population is one factor that increases the projected overall educational level. The growth of the Asian economies may slow this source of population growth. Many highly educated Asians stayed in the US after studying here, but a slowdown in the enrollments of foreign students may reduce this source of skilled labor. Without the effect of the Asian population growth, projections portrayed in Chart 4 would imply an even greater relative shift towards lower education levels.

The most important factor that lowers the projected level of education is the educational attainment levels of African Americans and Hispanics. Both of these groups are projected to grow much faster than the white population. As these groups take on a larger proportion of the population, can we expect some economic or social processes to work towards equalization of the education gaps?

As we have seen the gap in educational attainment between whites and African Americans and Hispanics has not declined. Population shifts and resultant labor market trends might reduce the earnings gap between whites and minorities, and this might give minorities a greater incentive to acquire more schooling. But research has not concluded that there are significant differences in the returns to schooling for different ethnic and racial groups (Barrow and Rouse, 2005). Therefore, at least in the past, similar returns to schooling have not resulted in an equalization of educational attainment. Data on educational attainment for African American and Hispanic men are particularly discouraging. Educational levels of African American women will probably rise, but that may be offset by more negative trends for African American men.

Because the Hispanic population is very heterogeneous and also in the process of change due to continued immigration, judging future educational trends for Hispanics is difficult. In 2000, about one quarter of the Hispanic population was foreign-born. A majority of both the native and foreign-born Hispanic population was of Mexican origin. Very recent research indicates that although the flow of immigration declined during the first part of the current decade, nevertheless, within that flow, the share of unauthorized immigrants rose. By 2004, more unauthorized migrants than authorized migrants were

entering the country (Passel and Suro 2005). Thus the overall educational problems associated with the adjustment of immigrants to the United States are likely to grow.

Trends in educational achievement over the last decade do not provide much reason for optimism. The percentage of the Hispanic male population with a BA actually fell between 1990 and 2000. Gains for Hispanic women were minimal. There is some evidence that Hispanics make relative educational progress in the second and third generation after immigration. Smith (2003), for example, shows that the educational gap between Hispanics (and Mexicans) and whites declines between first and second generation Hispanics. Hagy and Staniec (2002) found that, among high school graduates, first-generation Hispanics are *more* likely than native-born Hispanics to attend a community college and that second- generation Hispanics are more likely than native-born Hispanics to attend a four year college. They also point out that Hispanics are particularly dependent on public higher education and therefore more likely to be negatively affected by a weakened public sector.

Despite overall gains in educational attainment, the gap between whites on the one hand and African Americans and Hispanics on the other has grown over the last two decades. African American women have made good progress, but minority men, in particular, have experienced very little gain. Black and Hispanic students tend to come from lower income families and have access to poorer quality schools. They tend to have lower levels of academic achievement in the K-12 system. All of these factors are associated with lower enrollments in higher education and lower probabilities of completion once enrolled. But for African Americans in particular, achievement gaps persist even after controlling for these factors.

It is not clear that as these groups gain in population share that there is any market mechanism that will work to eliminate these gaps. Therefore, just as the country needs to continue to strengthen its educational base, demographic trends are working against that goal. The United States has benefited over the last century from its relatively high levels of educational attainment. Productivity gains were driven by the public commitment to the expansion of high school earlier in the century and the expansion of postsecondary education towards the end of the century. But expansion of public higher education has met stiff resistance at the state level. And the country may not be able to take advantage of highly skilled foreign workers (at least not for work that takes place within the US).

Conclusion

Occupational forecasts, analyses of job content, wage trends, and the changing nature of international competition all point to an increasing need for workers with high-level skills. Achieving increases in skill levels is going to be very difficult as long as current gaps based on income, race, and ethnicity in educational attainment remain. Those disparities will have a larger overall impact as Hispanics and African Americans account for a larger share of the population. Income is becoming more, not less, unequally distributed. Moreover, without a concerted effort to address this problem, it is unlikely that these gaps will fade away. The net cost of college has grown faster than overall increases in income, and differences in educational attainment between whites and Hispanics and African Americans have grown in the last 15 years. These developments are also taking place at a time of great resistance to increases in public investments in higher education.

Although I have focused primarily on higher education in this paper, clearly the foundation for increases in college enrollment and especially completion is based in the K-12 system. Many students who manage to enroll in college are already far behind. These circumstances blunt the effectiveness even of improved financial aid. In the short and medium run, colleges will continue to have to work with many students who arrive facing multiple academic, social, and economic problems. A comprehensive strategy to improve student outcomes will undoubtedly require a variety of measures including financial aid, programs to facilitate the transition from high school to college, improvements in remediation, innovations in pedagogy, and other types of student services. Colleges and states must also do a better job of analyzing where the weaknesses in their systems are most pronounced. This is particularly true of the institutions where lower income students are most concentrated. Unfortunately, these are also likely to be the institutions that have the least money to pay for "discretionary" services such as institutional research.

In our society, the extreme disparities in educational achievement based on income and the persistent gaps in educational outcomes between whites, on the one hand, and African Americans and Hispanics on the other, should be reason enough to raise the educational attainment of low-income and minority students. Increasingly, the country as a whole has an economic stake in overcoming these inequities.

References

Barrow L. & Rouse, C.E. (2005). *Returns to schooling by race and ethnicity* (WP-05-02). Chicago: Federal Reserve Bank of Chicago.

Goldin, C., & Katz, L. F. (2001). The legacy of U.S. educational leadership: Notes on distribution and economic growth in the 20th century. *American Economic Review, 91,* 18-23.

Hagy, A.P. & Staniec, J.F.O (2002). Immigrant status, race, and institutional choice in higher education. *Economics of Education Review, 21 (4),* 381-392.

Hirsh, R & Merrow, J. (eds.) (2005). *Declining by degrees*. New York: Palgrave Macmillan.

Institute on International Education (2004, November 10). *International student enrollments declined by 2.4 percent in 2003/2004*. Retrieved September 17, 2005 from http://opendoors.iienetwork.org/?p=50137.

Kane, T. J. (2004). College-going and inequality. In K. M. Neckerman (Ed.), *Social inequality* (pp. 319-353). New York: Russell Sage Foundation.

Kelly, P. (2005). *As America becomes more diverse: The impact of state higher education inequality*. Boulder, CO: National Center for Higher Education Management Systems.

Levy, F., & Murnane, R. J. (2004). *The new division of labor: How computers are creating the next job market*. Princeton, NJ: Princeton University Press.

National Center on Education and the Economy (1990). *America's choice: High skills or low wages*. Washington, DC: National Center on Education and the Economy.

Organization for Economic Cooperation and Development (2005). *Education and*

training: Education at a glance (Table A1.3a) [Data File]. Retrieved September 15, 2005, from http://www.oecd.org/dataoecd/22/35/35282639.xls.

Passel, J. S., & Suro, R. (2005, September). *Rise, peak, and decline: Trends in U.S. immigration 1992-2004*. Washington, DC: Pew Hispanic Center.

Smith, J. (2003, May). Assimilation across the Latino generations. *American Economic Review, 93*(2), 315-319.

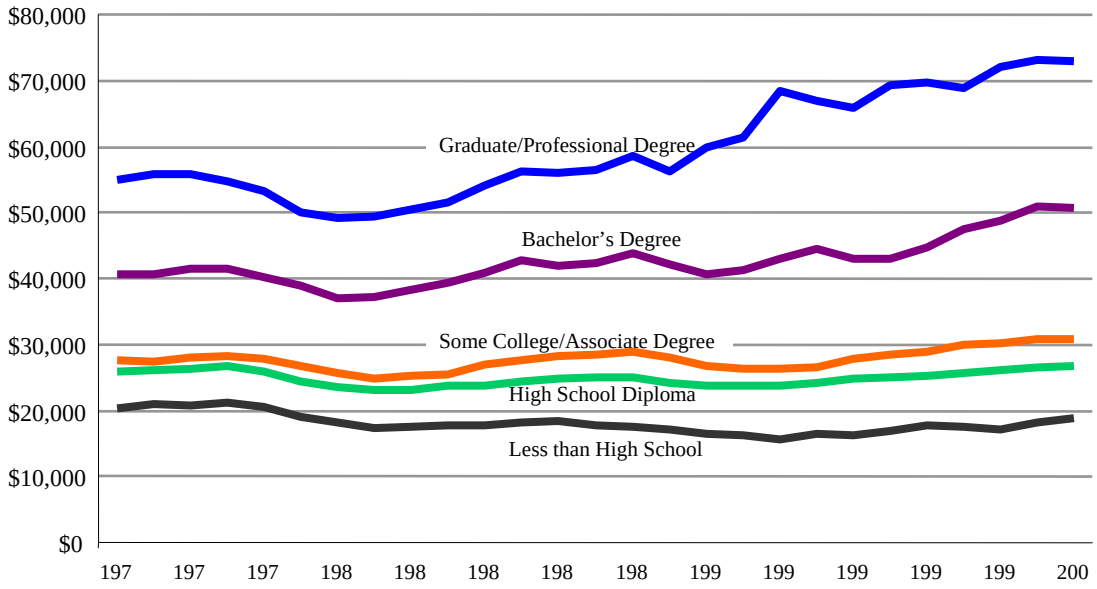
State tax fund appropriations for higher education FY1961 to FY2005. (2005, January). *Postsecondary Education Opportunity, 151*.

Turner, S (2004). Going to college and finishing college: Explaining different educational outcomes. In C. Hoxby, (Ed.) *College choices: The economics of where to go, when to go, and how to pay for* (pp. 13-56). Chicago: The University of Chicago Press.

U.S. Department of Education, National Center for Education Statistics. (2005). *The condition of education 2005* (NCES 2005-094). Washington, DC: U.S. Government Printing Office.

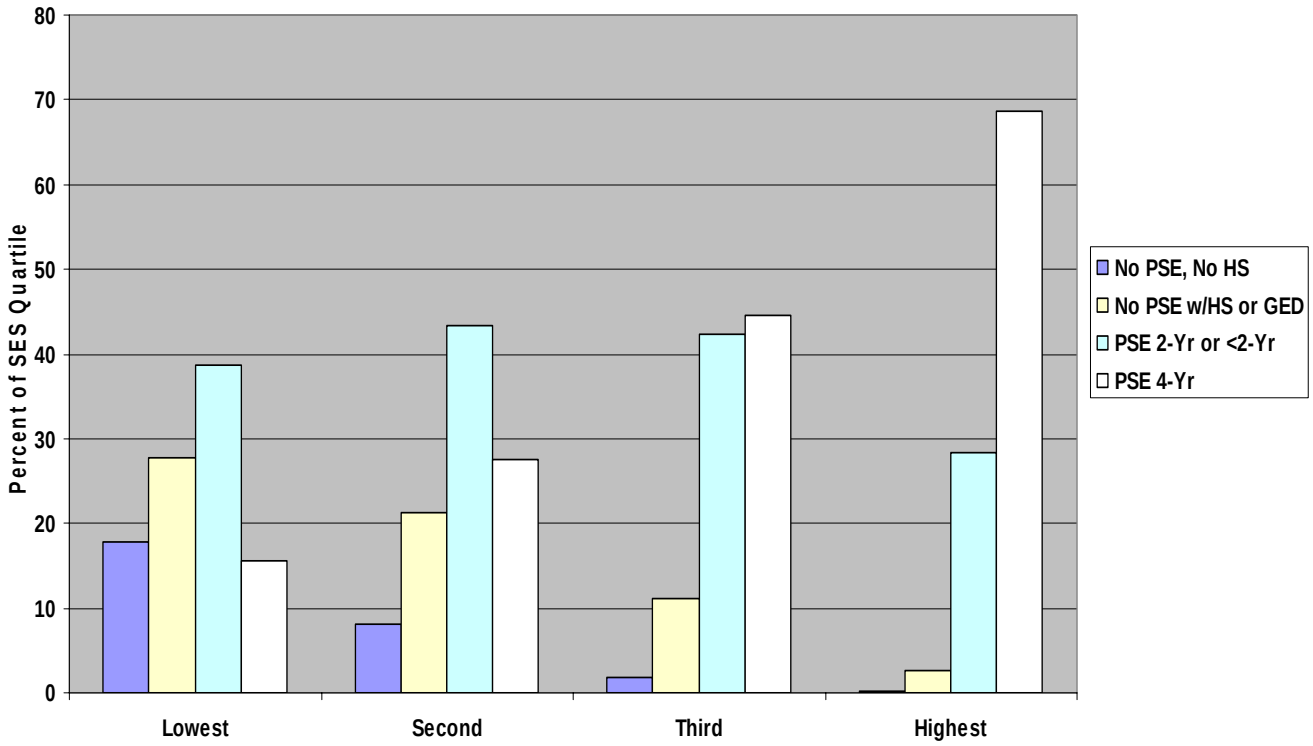
Young, A. Levy, D. & Higgins, M. (2004, September). *Many types of human capital and many roles in U.S. growth: Evidence from the county level educational attainment data*. Paper presented at the CESifo/Harvard University-PEPG conference, Munich, Germany.

Chart 1. Mean Earnings by Degree Level - Adjusted to 2001 Dollars (Using the Consumer Price Index)



Source: Kelly (2005) based on U.S. Census Bureau, Bureau of Labor Statistics

Chart 2. High School Completion and Initial Postsecondary Education by 2000 by SES Quartile (Eighth Graders in 1988)



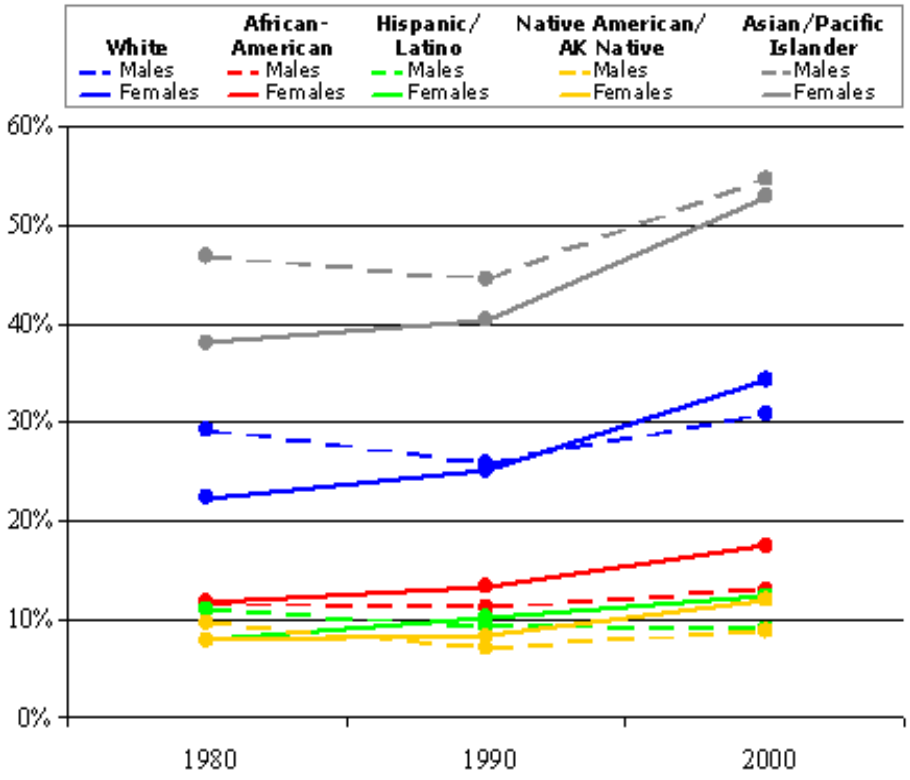
Source: National Education Longitudinal Study of 1988

Table 1. Percentage of 1992 12th-graders who entered postsecondary education and among those who earned more than 10 credits, percentage who earned a bachelor's degree within 8.5 years, and average time to degree, by race/ethnicity and gender

	Participated in postsecondary education				Earned at least a bachelor's degree		
Race/Ethnicity and Gender	Entered at least one postsecondary institution	Earned more than 10 credits	Earned more than 10 credits and any credits from a 4-year institution	All 12th graders in the sample	Among those who earned more than 10 credits	Among those who earned more than 10 credits and any credits from a 4-year institution	Of those who earned bachelor's degrees, average time to degree
All							
Total	78.2	68.8	52.2	35.1	51.0	67.2	4.58
Male	75.8	66.0	50.0	31.2	47.2	62.4	4.69
Female	80.7	71.6	54.3	39.0	54.4	71.7	4.49
Asian							
Total	91.8	82.3	68.5	47.7	58.0	69.6	4.64
Male	91.7	78.7	64.0	43.1	54.7	67.2	4.79
Female	91.9	86.8	74.1	53.6	61.7	72.3	4.49
Black							
Total	69.6	55.2	38.0	21.4	38.7	56.3	4.70
Male	63.7	48.0	29.9	14.6	30.4	48.8	4.93
Female	74.8	61.7	45.3	27.5	44.5	60.7	4.60
White							
Total	80.3	72.7	56.8	39.6	54.6	69.8	4.53
Male	78.0	70.1	54.9	35.6	50.8	64.8	4.63
Female	82.6	75.2	58.6	43.8	58.2	74.6	4.45
Hispanic							
Total	70.5	56.3	34.0	16.8	29.9	49.5	5.13
Male	68.8	55.9	35.0	15.7	28.1	44.9	5.36
Female	72.1	56.7	33.0	17.9	31.6	54.3	4.94

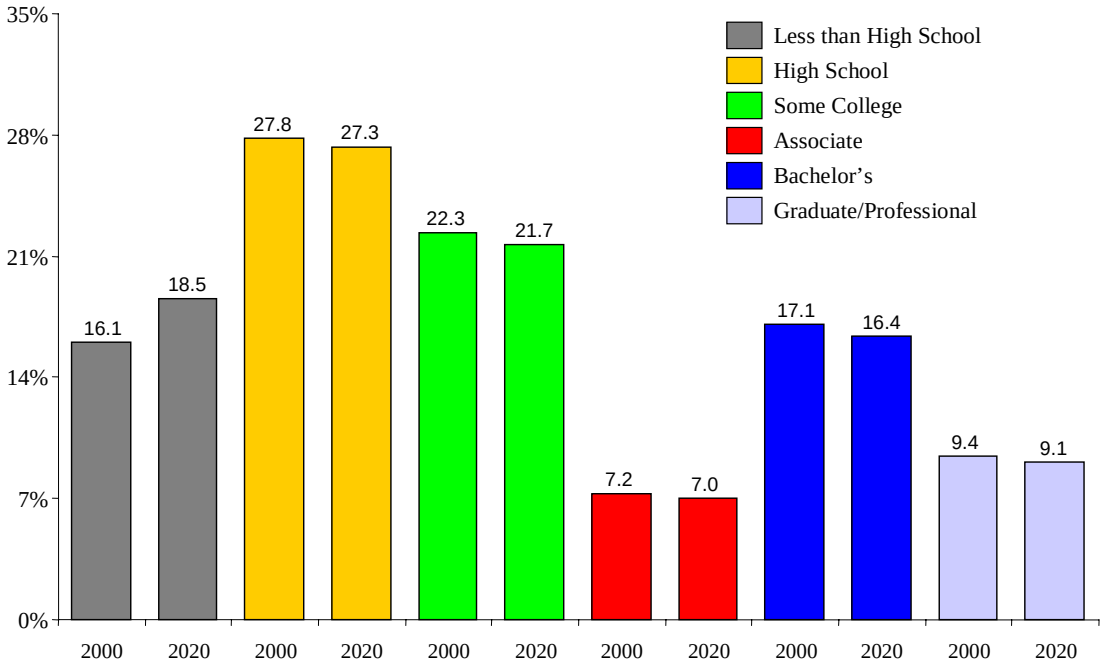
Source: National Education Longitudinal Study of 1988.

Chart 3. Percent of the U.S. Population Ages 25-34 with a Bachelor's Degree or Higher by Gender and Race/Ethnicity (1980 to 2000)



Source: Kelly (2005) based on U.S. Census Bureau, Public Use Microdata Samples based on 1980, 1990, and 2000 Census

Chart 4. Percent Changes in Educational Attainment from 2000 to 2020 as a Result of the Projected Changes in Race/Ethnicity (25-64 year-olds)



Source: Kelly (2005) based on U.S. Census Bureau, Public Use Microdata Samples based on 2000 Census and U.S. Population Projections