



# Adult Enrollment and Educational Attainment

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## Abstract

This paper examines the growth of adult enrollment in recent decades in the United States and its impact on the educational attainment of the population. First, in order to better understand the growth of adult enrollment, the change between 1970 and 1990 is decomposed into its demographic elements. Next, the projected growth of enrollments over the next decade are analyzed. Finally, the paper examines the cumulative impact of adult enrollment on educational levels, as well as on race and sex differentials in educational attainment. The study draws on data from the Integrated Postsecondary Education Data Systems, the U.S. decennial censuses, and the School Enrollment Supplements of the October 1970, 1980, and 1990 Current Population Surveys. The results highlight the role of the baby-boom generation in spurring the growth of adult enrollments. They also show that adult enrollments contribute significantly to the educational attainment of the U.S. population.

## Introduction

Life-course transitions have become a focal point for demographic and other social science research. Many contemporary social concerns can be viewed as problems encountered en route to stable adulthood: out-of-wedlock pregnancy, dropping out of high school, unemployment and underemployment, and marriages that end in divorce. Only a minority of the population experiences the still-normative sequence of completing school first, starting full-time employment next, getting married third, and only then having children (Rindfuss 1991; Rindfuss, Swicegood, and Rosenfeld 1987).

Here, we focus on one out-of-sequence life-course transition—namely, delayed school enrollment. Older students who return to school remain an understudied population. For example, in Pascarella and Terenzini's (1991) 691-page review of the literature on the effect of college on students, older students are mentioned on only nine pages.

Research on adult students inevitably divides along disciplinary lines. Psychologists have examined the role of personality and social support in predisposing some individuals to return to school (Kasworm 1990; Spannard 1990; Clayton and Smith 1987; Tittle and Denker 1977), although the growing size and changing composition of the population of returning students suggests that more research is needed on this issue. Psychologists have also found evidence of an increase in independence and marital conflict among women who return to school (Ballmer and Cozby 1981), but more research is needed on larger samples and especially on those who do not succeed in completing a degree.

Sociologists have studied the marital, family, and job factors that are associated with returning to school (Bradburn, Moen, and Dempster-McClain 1995; Felmlee 1988; Suitor 1988). Here again, there is much room to expand on the research that has been completed, since the population of older students continues to change.

Economists and sociologists have studied the career consequences of returning to school, and the evidence suggests modest increases in earnings and occupational status (Felmlee 1988; Kanter 1989). Studies are mixed on whether older students receive a smaller return on their educational investment than those who complete their degrees earlier in life (Leigh and Gill 1997; Light 1995; Marcus 1984; Griliches 1980). Again, more research is needed that compares returns at different ages, different degree levels (for example, associate's versus bachelor's degrees), different types of institutions, and in different fields of study.

Large gaps remain in this research literature. While many studies have noted the growth in the enrollment of older students, few have tried to explain why these enrollments increased. Most studies in this area focus on women (except Light 1995 and Griliches 1980). Few include men or compare men and women, and fewer still have considered race and ethnic differences among older students. In this article, we focus on three aspects of the education of older students: the growth in enrollment; its effects on educational attainment; and its effects on race and gender disparities.

It is well known that the proportion of traditional college-age students has declined, while the proportion of older students returning to school has grown steadily. What is less appreciated is

the role that the baby boom has played in these changes. When the large baby-boom cohort passed through the traditional college-age years into adulthood, older cohorts grew in size relative to their younger counterparts. We examine how much of the growth of the enrollment of older students is simply the result of this shift in the age structure—and how much is due to increases in age-specific enrollment rates. We further explore the impact of the age structure on enrollments by examining the age pattern of projected enrollments over the next decade.

After exploring the growth of enrollments, we turn to the effect of adult education on the educational levels of the population. Many of those who return to school do so part time, and they are often faced with many competing demands for their time and attention. Are those who return to school completing additional years of schooling and completing their degrees? We document the cumulative effect of returning to school on high school graduation, college graduation, and average years of school completed. Finally, we assess the effect of delayed enrollment on race and gender differentials in educational attainment. What impact does delayed enrollment have on the gender differential in educational attainment? Do African Americans narrow the attainment gap vis-à-vis whites by acquiring more education later in life?

We examine both college enrollment and the cumulative educational attainment of white and African American men and women in the U.S. between 1970 and 1990, drawing on fall enrollment data from the Integrated Postsecondary Education Data Systems (IPEDS), as reported in the Digest of Educational Statistics (National Center for Education Statistics [NCES] 1996), and Census estimates of the size of the population in specific age and sex groups, as measured in the Current Population Survey (U.S. Bureau of the Census 1978, 1990, and 1992a). We present the results of analyses of enrollment and attainment using data from the October School Enrollment Supplement of the Current Population Survey for 1970, 1980, and 1990. We also draw on published reports of educational attainment by age (U. S. Bureau of the Census 1970, 1976, 1984, 1987, 1992b, and 1996).

## **The Growth in Adult Enrollment**

Table 1 documents the growth in enrollment of students in institutions of higher education by age group.<sup>1</sup> Table 1 draws on IPEDS data on enrollment in higher education (Digest of Educational Statistics 1996, Table 171). The percentage change in enrollment between 1970 and 1990 is presented for all students, full time and part time. We refer to those aged 24 and younger as “traditional-age” students, and those 25 and older as “adult” students.

The growth in enrollment has clearly been faster among adult students than among traditional-age college students. The total enrollment for students aged 24 or younger grew 25.1 percent between 1970 and 1990, compared with 154.5 percent for students 25 and older. As Table 1 reveals, this is not simply a reflection of growing part-time enrollment among older students. The faster growth in the enrollment of older students is most evident among full-time students, because there has been very little growth among traditional-age full-time students. What has occurred instead is that many traditional-age students are now enrolled part time. Indeed, part-time enrollment has been the fastest growing segment of traditional age college students.

The enrollment of women grew faster than that of men during this period—but for both men and women the enrollment of older students grew faster than that of younger students. The largest percentage gain occurred among older women enrolled full time (up 477.2 percent), but this group was starting from a small base.

As a result of these trends, older students now comprise a larger fraction of higher education enrollment than ever before. In 1970, students aged 25 and over comprised just over one-quarter of all enrolled students (27.8 percent), and just over one-tenth (11.0 percent) of full-time students. By 1990, these figures had grown to 43.9 percent of all students and 21.6 percent of full-time students.

Yet, this sharp growth was not entirely due to a growth in *enrollment rates* for specific groups of men and women. Instead, an upward shift in the age distribution accounts for much of this change. As the baby-boom generation aged, the size of the adult population grew more quickly than did that of the traditional college-age population. In 1970, the ratio of the population ages 25-39 to the standard college age population (18-24) was 1.22. By 1990, this ratio had increased to 2.33. In other words, the age group most likely to return to school grew sharply in size relative to that of the traditional college-age population.

These figures suggest that the number of older students returning to school would have grown even if the age-specific rate of returning had remained constant at its 1970 level. We calculated just how much of this growth would have occurred when holding age-specific enrollment rates constant at their 1970 level and allowing only the age distribution of the population to vary.<sup>2</sup> The results are presented in the second column of Table 1. For men, changes in age structure and the size of the underlying population account for the vast majority of the growth in enrollment at older ages. In other words, we can predict most of the trends in the enrollment of men by holding the 1970 age-specific enrollment rates constant and simply substituting the 1990 age structure. For example, holding age-specific rates constant at their 1970 level, we would have expected an increase of 59.7 percent in the total enrollment of men aged 25 and up between 1970 and 1990. The actual increase in enrollment for this group was 61.9 percent. Thus, for men, the actual outcome closely matches the assumption that age-specific rates did not change—in fact, the only change during this period was a growth in the size of the pool of older students from which to draw. Indeed, in a number of cases, the changes predicted for men are greater than those observed. As we will see, this is consistent with decline in age-specific enrollment rates for men.

For women, changes in enrollment rates, as well as changes in age structure, are needed to account for the observed trends in enrollments. For no group does the assumption of static age-specific enrollment rates adequately predict the sharp enrollment growth experienced by women during this period. Total enrollment of women aged 25 and older grew 312.5 percent between 1970 and 1990, while the growth of the population of students aged 25 or more would have predicted a growth rate of only 52.1 percent. Changes in the age structure account for a small proportion of enrollment growth for women enrolled both full time and part time.

These results are not just an interesting window into the recent past—they also hold important implications for the future, because changes in the age structure will have the opposite effect over the next decade. The last column of Table 1 compares enrollment projections for 2006 with

actual enrollments in 1990, by age.<sup>3</sup> For both men and women, the growth of enrollment among students aged 25 and older is projected to be smaller than the enrollment growth among younger students. Enrollments of older students will not decline, but this group will no longer grow as fast as the pool of younger students, unless age-specific enrollment rates increase. Colleges and universities that are just now seeking to tap the pool of older students may have waited too long, for this population is no longer the growth market that it was during the 1970s and 1980s.

Figures 1 and 2 display age-specific enrollment rates in institutions of higher education for men and women. We calculated these rates by comparing NCES enrollment data (numerator) with Census Bureau population data (denominator) for the same age and sex groups in 1970 and 1990. Figure 1 shows a slight drop in the age-specific enrollment rates of male full-time students. For men enrolled as part-time students, there was an increase in enrollment for those under age 25, and a decline for those 25 and older. Thus, there was a shift from full-time to part-time enrollment among traditional-age male students. In contrast, Figure 2 shows a marked increase in enrollment rates for women at all age levels for both part-time and full-time students.

Figures 3, 4, 5, and 6 corroborate this picture. In these figures we present an original analysis of data from the 1970, 1980, and 1990 October Current Population Surveys. In these figures, we focus on undergraduate enrollment, in order to avoid conflating the growth of older undergraduates with the growth of graduate education. To estimate college enrollment rates, we restricted our measure of enrollment to include only those who had enrolled in their 13th through 16th year of school. In this way, we were able to target college enrollment rather than those enrolled in high school or graduate school. The 1970 curve ends at ages 30 to 34, because the questions on educational enrollment were not asked of those aged 35 and older.<sup>4</sup>

Figure 3 shows that the enrollment rates of white women over age 25 did indeed increase over time, and increases are evident during both the 1970s and 1980s. For African American women (Figure 4), the 1970-1980 comparison shows a sharp increase in undergraduate enrollments between 1970 and 1980. During the 1980s, African American women's enrollments continued to increase among traditional-age college students, but declined among those age 25 and older.

Figure 5, which presents similar results for white men, shows remarkably little upward secular trend in undergraduate enrollments for white men. Enrollment rates dropped between 1970 and 1980 for traditional-age white men, but rebounded by 1990. There was very little change for older white men over the same period. For African American men (see Figure 6), there was an increase in undergraduate enrollment rates at older ages between 1970 and 1980, followed by a decline between 1980 and 1990. On the bright side, the undergraduate enrollment rate of traditional-age African American men jumped sharply between 1980 and 1990. For both white and African American men, undergraduate enrollment rates of adult students had roughly returned to their 1970 levels by 1990.

For men, then, it is clear that an increase in the enrollment of older college students between 1970 and 1990 was due to changes in the age structure of the population, rather than changes in age-specific enrollment rates. For women, the aging of the baby boomers reinforced the effect of increasing age-specific undergraduate enrollment rates.

The levels as well as the trends are worth noting. CPS data suggest that, by 1990, 4.9 percent of white women aged 30 to 34 were enrolled in college. Even for white women between the ages of 40 and 44, 3.5 percent were enrolled in college. Similar rates are evident for African American women for 1990, although there is greater variability in these graphs due to smaller sample sizes. For white men, enrollment rates exceed 2.7 percent at ages 30 to 34 and 2.1 percent at ages 35 to 39. The comparable figures for African American men are 1.4 percent at ages 30 to 34 and 1.8 percent at ages 35 to 39.

It should be noted that full-time enrollment drops more sharply with age than does total enrollment. As a result, a much larger fraction of 40-year-olds are enrolled part time than are 30-year-olds. This pattern is evident in Figure 7, which presents the proportion of students enrolled full time by age in 1990 for each race and sex group. The decline in the proportion of full-time students is broadly similar for the different race and sex groups, once the greater sampling variability for data on African American students is taken into account. At ages 20 to 24, roughly three-quarters of students are enrolled full time; by ages 40 to 45, only about one-quarter of students are enrolled full time.

### **Cumulative Educational Attainment and Race and Gender Disparities**

Figures 1 through 6 show that a small proportion of the population continues to be enrolled in higher education through at least age 45. However, what appear to be low enrollment rates are in fact potentially quite significant, because they extend over so many years. The cumulative impact of schooling between ages 25 and 45 may indeed be much greater than one might guess from a quick glance at these enrollment rates. We now turn to the question: What impact does this extended enrollment have on the educational attainment of the population? In other words, how much of this extensive enrollment translates into eventual completed years of schooling and degree attainment? We examine the data by race and sex, considering the issue of the impact of later-life education on different groups, along with the issue of cumulative attainment patterns.

Figure 8 presents the cumulative years of schooling completed by a cohort of men and women, based on successive samples of CPS respondents.<sup>5</sup> In this and subsequent analyses, we broaden our focus from college enrollment to all formal school enrollment, including high school equivalency programs and graduate school programs. The data clearly indicate that the mean years of schooling completed by the cohort continues to rise as the group passes through its thirties, and even forties. The cohort of white men aged 20 to 24 in 1970 had completed an average of 12.8 years of schooling; by the time they were 30 to 34 in 1980, they had completed 13.4 years of schooling. They continued to acquire additional schooling even as they entered their early forties, and by 1990 had completed 13.7 years of schooling. Thus, approximately 7 percent of the years of schooling completed by this cohort was acquired at the ages of 25 and older.<sup>6</sup>

The average years of schooling completed trend upward with age for all of the race and sex groups examined, with the exception of African American males over age 40 (undoubtedly reflecting some sampling variability). The gap between the four race-sex groups remains of



roughly similar size for this cohort as it ages. In other words, in this cohort women and minorities did not catch up to white males in average educational attainment at later ages. Note that Figure 8 (as well as Figures 9 and 10) reflects the experiences of the cohort that was aged 20 to 24 in 1970. Recall from Figures 4 and 5 that the enrollment of women at all ages has jumped sharply since 1970. As a result, the gender gap in educational attainment has been much smaller in recent years, and the experience of adult enrollment will enable women to catch up with—and perhaps surpass—men in educational attainment.<sup>7</sup>

Figure 9 focuses on high-school completion, rather than the average years of schooling measure presented in Figure 8.<sup>8</sup> Here, again, we see that later-life enrollment in education continues to have an impact on the levels of educational attainment. For white men and women, the proportion completing high school increased from just over 80 percent (82.6 percent for white men, 82.7 percent for white women) at ages 20 to 24 to about 90 percent (89.5 percent for white men, 90.1 percent for white women) by ages 45 to 49. It is notable that the graph continues to slope upward, even when white men and women are in their thirties and forties, indicating not only continued enrollment but the completion of additional years of schooling.

In the case of high school completion, African Americans narrowed the attainment gap vis-à-vis white Americans. The race differential in high school completion narrowed from 15 to 20 percentage points at ages 20 to 24 (20.2 percentage point gap for men, 15.2 for women) to less than 10 percentage points (8.9 percentage points for men, 8.0 for women) at ages 40 to 44.<sup>9</sup> The sex differential within races was quite small in terms of high school completion.

While each year few individuals complete high school after age 25, the cumulative impact of low rates of high school completion are nonetheless quite significant. The data indicate that the proportion of this cohort completing high school after age 25 increased by 8.4 percent for white men, 8.9 percent for white women, 22.6 percent for African American men, and 16.0 percent for African American women.

We must take into account that the data on educational attainment are self-reported and may reflect some degree of exaggeration on the part of respondents. As noted in Footnote 4, CPS self-reported enrollment data are higher than IPEDS enrollment figures for the corresponding age and sex groups. Nonetheless, even assuming the tendency of some respondents to inflate their educational credentials as they become older, these data do suggest the importance of adult enrollment in the attainment of additional years of schooling.

Figure 10 focuses on college completion. Here, again, there are continued increases in attainment as a cohort ages. The proportion of white men that had completed college climbed from about 26.3 percent at ages 25 to 29 to nearly 37.0 percent by ages 45 to 49.<sup>10</sup> In terms of college completion, white men increased their lead on other race and sex groups. The racial disparity in college completion also increased as this cohort aged.

As with the case of high school completion, the cumulative effect of later-life degree completion is quite impressive. For white men, the proportion who reported having completed 16 or more years of schooling increased by 40.7 percent after age 30. The comparable figures are 38.7 percent for white women, 34.2 for African American men, and 45.5 for African American women. In other words, for each of these race and sex groups, more than one-third of those

who completed their college degrees did so at age 30 or older.

## Discussion

In this brief report, we advance several ideas about the growth and impact of adult enrollment in higher education. First, we show that the aging of the baby-boom generation into their thirties and forties has had a profound impact on the growth of adult enrollment. Nearly all of the growth in adult enrollments for men, and a modest fraction of the growth for women, is due to the aging of this generation. This result is important, because future growth will not follow this trend. Through the year 2006, the growth in enrollment of traditional-age college students will surpass that of older students.

Trachtenberg (1997) suggests that, as the baby boomers continue to age, there will be enrollment growth at ever older ages. While this is of course a possibility, the historical pattern of low enrollment rates among those in their forties and fifties suggests that the baby boomers are unlikely to make as much of a mark in future years as they have in the past. The more likely consequence of the changing age structure is a return to the importance of the traditional-age college student.

A second important conclusion we document is that adult enrollment does indeed have a significant cumulative effect on the educational attainment of the population. When an age cohort is followed through their thirties and forties, educational levels do advance. This pattern is evident in average years of schooling completed, in the proportion of the population that has completed high school, and the proportion that has completed college. This brief report suggests that adult education leads to the completion of additional years of schooling and even degree completion.

A third conclusion we reach is that adult education does not rectify important differentials in educational attainment. The extent of the gap between race and sex groups depends on the particular measure of education employed. For both African Americans and whites, men and women differ little in the level of high school completion, and this similarity changes little with age. As they grow older, African Americans narrow the gap with whites in the level of high school completion. However, the race differential in college completion persists and may even grow slightly with age, as does the gender gap in college completion among whites. It should be noted, however, that in recent years, more women than men graduated from college, and adult education may well enable women to surpass men in the acquisition of overall educational credentials.

Should we promote the acquisition of education among older students? On the one hand, one could argue that investments in schooling should be made early in life, because younger graduates can benefit from these investments for a longer period of time than older graduates. For example, a college degree earned at age 22 can enhance earnings over a career spanning five decades, whereas a degree earned at age 40 can be expected to pay off for perhaps three decades. Even if the increase in hourly wages of these two degrees are comparable (a point that remains in dispute), the longer payback period argues in favor of promoting earlier rather than later investments.

On the other hand, we maintain that adult education has become just too important a source of educational investment to ignore. High school completion after age 25 comprises a significant fraction of high school completion, especially for African Americans—and college completion after age 30 represents an even more significant fraction of college completion. If increasing the educational levels of the population is a national goal, evidence from the recent past suggests that adult education is an important source for training and skill development.

Policies designed to promote the acquisition of schooling by the population should include adult students as one of the target populations, but not at the expense of investments in schooling focused on younger groups. Changes in social policies, such as welfare reform, should be designed to facilitate rather than inhibit the lifelong acquisition of additional education. If steps were taken to improve persistence and completion rates, the impact of adult education might well be even greater than is documented here.

The findings sketched here clearly call for further research. In particular, the growth of enrollment rates of older women call for more careful investigation—in particular, how women's changing labor force participation, changing fertility patterns, and changing occupational patterns are related to this increasing tendency to return to school.

## Endnotes

- <sup>1</sup> We focus on formal enrollment in institutions of higher education, rather than on-the-job training or seminars sponsored by employers. As a result, we understate the extent of adult educational investments.
- <sup>2</sup> We calculated age-specific population rates for men and women by dividing IPEDS enrollment data by age-specific population data for each sex from the same year. The IPEDS enrollment data were obtained from the *Digest of Educational Statistics*, and the population estimates were obtained from *Current Population Reports* (Series P-25). We then applied the 1970 age-specific enrollment rates to the 1990 population base. This calculation provides an estimate of the rate of change in enrollments among specific age groups due to changing population size rather than changing enrollment rates.
- <sup>3</sup> We rely here on NCES projections for the year 2006. See the *Digest of Educational Statistics*, 1996, Table 171.
- <sup>4</sup> Estimates of age-specific enrollment rates are slightly higher when using CPS self-reports compared with IPEDS enrollment data. However, the age patterns obtained from the two data sources match each other quite closely.
- <sup>5</sup> These calculations were based on the comparison of age-specific groups, by race and sex, in successive CPS cross-sections. For example, we obtained educational attainment data for white men aged 20 to 24 in 1970. We then plotted this result against the attainment of those aged 30 to 34 in 1980 and 30 to 44 in 1990. In this way, we followed the experiences of a cohort via the analysis of repeated cross-sectional surveys.
- <sup>6</sup> The growth of education at age 25 and older was .9 years (13.7-12.8), which, divided by 12.8 equals 7 percent.
- <sup>7</sup> We displayed the experience of the cohort aged 20 to 24 in 1970, rather than more recent cohorts, in order to display the full educational trajectory of the group. More recent cohorts have not yet completed their attainment of schooling.
- <sup>8</sup> In 1990, the data reflect high school completion; for earlier years, the data represent the completion of 12 years of schooling.
- <sup>9</sup> In principal, schooling levels should remain the same or increase as a cohort ages, and never decline. However, the procedure of following a cohort through repeated cross-sectional surveys allows for the possibility of decline due to altered responses to survey questions or sampling variability.
- <sup>10</sup> It should be noted that the 1995 data points refer to the completion of a bachelor's degree, while the earlier surveys reflect the completion of 16 years of schooling.

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Table 1. Enrollment Trends, 1970-1990: Enrollment by Age, Sex, and Full-Time/Part-Time Status

	<b>Percent Change 1970-1990 Actual</b>	<b>Percent Change 1970-1990 Imputed At 1970 Rates</b>	<b>Projected Percent Change 1990-2006</b>
<b>OVERALL</b>			
Total			
Age 14-24	25.1	9.3	27.5
Age 25+	154.5	56.1	7.2
<b>Men</b>			
Age 14-24	8.6	14.6	21.8
Age 25+	61.9	59.7	10.4
<b>Women</b>			
Age 14-24	47.1	4.4	33.2
Age 25+	312.5	52.1	5.1
<b>FULL TIME</b>			
Total			
Age 14-24	18.4	8.6	27.7
Age 25+	164.0	57.4	25.2
<b>Men</b>			
Age 14-24	1.7	13.9	22.5
Age 25+	53.8	61.2	44.3
<b>Women</b>			
Age 14-24	42.1	3.5	32.8
Age 25+	477.2	71.3	10.6
<b>PART TIME</b>			
Total			
Age 14-24	59.2	12.9	27.0
Age 25+	150.7	55.8	0.3
<b>Men</b>			
Age 14-24	50.6	18.5	18.4
Age 25+	65.9	59.2	-4.1
<b>Women</b>			
Age 14-24	67.6	7.6	34.6
Age 25+	274.2	52.1	3.0

Source: IPEDS Data, Digest of Educational Statistics, 1996, Table 171 and Census population estimates.