

Race and the Growing Female Advantage in Educational Attainment: A Trend Comparison*

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Abstract

It is well known that the gender gap in educational attainment is larger for blacks than whites, but the historical trends that lead up to the current situation have received surprisingly little attention. Using historical data from the U.S. Census Integrated Public Use Microdata Samples and the Current Population Surveys, we find that the gender gap in college completion has evolved differently for whites and blacks. The relative (to men) educational position of black women has long been more favorable than that of white women, but the female-favorable educational trends of the past 60 years are far stronger for whites than for blacks. Continuing black female gains are largely due to their relatively higher rates of transition to postsecondary education. White female gains have come from female favorable trends in four-year college completion given secondary education, as well as in the transition to postsecondary education. Both black and white males were much more likely than females to delay completion of college in earlier years, but this gender difference has diminished. The general trend is for racial convergence in the age pattern of college completion, and for the black gender gap to resemble the white gender gap, even as overall rates of college completion by blacks remain far below those of whites of both genders.

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In the United States today, women far outnumber men among new college graduates. Overall, women earn 58% of all bachelor's degrees, while the 67% gap among African-Americans is even larger (NCES 2007). How did this large female-favorable advantage in bachelor's degrees among blacks emerge over time? Existing literature has recognized that black males have historically had an especially large educational disadvantage compared with black females (Mandara 2006; DiPrete and Buchmann 2006; Buchmann, DiPrete, and McDaniel 2008). As early as 1954, when the great majority of black college students were enrolled in historically black colleges and universities, women comprised 58% of the students enrolled in these institutions. When the Census Bureau began tracking bachelor's degrees by race and gender in 1974, women earned 57% of all degrees awarded to blacks (Cross 1997; Cohen and Nee 2000). On the basis of these statistics, it appears that the especially large gender gap for blacks does not constitute a reversal, as it does for whites (Buchmann and DiPrete 2006), but rather is the continuation of a longstanding female advantage in the likelihood of completing college.

The gender gap in higher education among African Americans has generated considerable interest among academics (see, e.g. the recent special issue of the *American Behavioral Scientist* edited by Jackson and Moore in 2008 on "the African-American male crisis in education"). Despite this interest, however, surprisingly little research has investigated gender-specific patterns and trends in educational attainment for blacks either alone or in comparison with patterns and trends for whites. Hauser (1993) analyzed rates of college entry by gender and race using October CPS data from 1972 to 1988, and

Cohen and Nee (2000) provide information on enrollments by gender and race from the middle 1970s to the middle 1990s from the *Digest of Educational Statistics*. To date, however, little is known about how the black gender gap has evolved over the course of the twentieth century. Specifically, we do not know much about racial differences in the gender gap in the period before women began the process of overtaking men in college completion during the 1970s. Various scholars have put forward hypotheses for why the black gender gap is larger than the white gender gap, which involve race-specific gender differences in educational expectations, adolescent culture, student attitudes, school curriculum, and parenting styles (Davis 2003; Lopez 2003; Ogbu 2003; Mandara 2006; Reynolds and Burge 2008; Downey 2008; Jackson and Moore 2008). But progress in explaining these gaps has been limited, and continuing research should be informed by an understanding of the historical progress of these trends, including the structure of educational transitions that produce them, and their age-specific pattern.

Black women's large advantage in higher education relative to black men has significant social, economic, and demographic consequences for the black population. It portends low marriage rates among blacks, which in turn impact family formation and parenting (Bianchi and Casper 2000), and persistent low employment prospects for a growing proportion of black men. Rindfuss et al. (1987) showed that continuing education past high school reduced the odds of becoming a parent, but that the 'protective' effect of education was reduced when the educational trajectory of the individual is interrupted (Bozick and DeLuca 2005:533). Hogan (1981) and Marini et al. (1989) found that white males who experienced a disorderly pattern of school completion, labor force entry, and marriage received lower earnings returns from their

education than did white males who followed a normative sequence. This pattern did not hold for women; in particular, the penalty for late graduation has been much smaller for women than men (Taniguchi 2005). Clearly, understanding the causes as well as the consequences of the large gender gap in higher education among blacks is an important task for social scientists.

The current study has four objectives. The first is to investigate gender differences in the age pattern of college completion and, specifically, the extent to which gender inequalities in educational attainment vary by age and race for post World War I birth cohorts. The second is to investigate gender differences in the timing of entry into post-secondary education as well as in the process of moving through post-secondary education in order to understand why gender inequalities in college completion rates vary by age. Third, we seek to understand which transitions are most crucial for explaining changes in the educational gender gap for blacks and for whites over time. Fourth, we consider the impact of changing incarceration rates on the black gender gap in college completion compared to the white gender gap.

The pathways that American students take from high school to the completion of a college degree are not rigid, but all pathways are punctuated by certain necessary transitions (Goldrick-Rab 2006; Pallas 2003; Mare 1981). In the United States, completing high school is the first step to gaining access to postsecondary education. Many youth are not eligible to become college students because they have not completed high school. High school graduates who decide to enroll in college must navigate several more steps (e.g., applying to college, being admitted into college, and then matriculating into college) before they become college students. Of course, only individuals who

enroll in college can graduate from college. Any group difference in college completion rates can therefore be decomposed into differences in the high school completion rate, the transition to college rate, and the conditional probability of completing four year college, given college entry. When seeking to understand race and gender differences in college completion, it is illuminating to break college completion into these antecedent transitions.

Available evidence indicates that the current female advantage in college completion in the United States is due to female advantages at various transitions points. For example, females have lower high school “status dropout” rates than males, and the gap has been widening since the middle 1990s.¹ During the 1990s it appeared that male and female dropout rates were becoming similar, but female dropout rates declined after 1996 and the gap widened again. In 2005, almost 11 percent of males age 16-24 were dropouts, compared to 8 percent of females (NCES 2007). Dropout rates vary substantially by ethnic group, but the male disadvantage holds for all major groups. In 2005, male dropout rates for whites, blacks and Hispanics were 6, 12, and 26 percent respectively, compared to female dropout rates of 5 percent for whites, 9 percent for blacks, and 18 percent for Hispanics (NCES 2007).

Today females are also more likely to enroll in four-year colleges than males. Both of these advantages explain, in part, the higher college completion rates of females relative to males. At each transition point, moreover, there are important differences between racial groups, with larger female-favorable gaps among blacks and Hispanics than whites. For example, the odds that a white 16-24 year old male was either enrolled in high school or had a diploma or GED were 89% of the white female odds in 2004. For

blacks, however, the male odds were only 73% as high as the female odds and for Hispanics they were only 57% as high (NCES 2007). Racial differences at each transition contribute to racial differences in the overall rate of college completion.

In addition to differences in whether or not a transition is made, differences in the timing and pace at which transitions occur also have a bearing on the likelihood of completing college. Three components combine to constitute the pace of transition through college. The first is the timing of entry into college, which includes both entry into any type of post-secondary education and entry into a four-year college institution. The second concerns interruptions of college education. The third concerns the rate of accumulating the necessary credits to complete college during those periods when a student is continuously enrolled.

All three of these components could affect race and gender differences in college completion rates. Previous research establishes that students who enroll in college directly after high school have higher rates of overall college enrollment, persistence in college, and graduation (Bozick & DeLuca 2005, Horn & Premo 1995), and gender differences in the timing of transitions could affect gender differences in completion rates. At least in recent years, males have been more likely than females to delay enrollment in college. Data from the National Educational Longitudinal Study (NELS) of the high school class of 1992 indicates that the female advantage in immediate college enrollment holds for all socioeconomic status groups, though it is smaller for those of high SES backgrounds (King 2000). More recently, Freeman (2004) found that of those who enrolled in college in the year 2000, 60% of men compared to 66% of women enrolled immediately after high school.

Once in college, women attain a degree more quickly than men. For example, of students who entered college in the fall of 1995, 66% of women had completed a bachelor's degree by 2001 as compared to 59% of men. Men were more likely to have no degree or to not be enrolled as of 2001, but they were also more likely to still be enrolled in a bachelor's degree program than women. While 50% of black and Hispanic women had completed a bachelor's degree in this period, only 37% of black men and 43% of Hispanic men had done so (Freeman 2004). Meanwhile, recent evidence finds that blacks were more likely to experience interruptions than whites at the University of Minnesota (Desjardens et al 2006)), and in the cohort of students who were in eighth grade in 1987-88 (Goldrick-Rab 2006).

The most obvious reason why males would differ from females in their timing of entry into post-secondary education concerns their timing of high school completion. The male delay in high school completion has several sources including the growing tendency for boys to begin elementary school at an older age (Graue and DiPerna 2000; Malone et al. 2006), their higher rates of grade retention in elementary school relative to females (Dauber, Alexander, and Entwisle 1993; McCoy and Reynolds 1999), and their higher rates of high school dropout and reliance on the GED to complete secondary school than females (NCES 2007). A higher rate of interrupting college and a slower rate of progress for continuous enrollees could be triggered by lower academic performance for males relative to females (Buchmann and DiPrete 2006). A higher propensity to take breaks and a greater average length of these breaks could be due to gender differences in alternative opportunities in the labor market or the military.² However, we know little

about gender-specific trends in the different components of delay that affect the age of college completion, let alone about the causes of delay either for whites or blacks.

In the following sections, we examine gender and racial trends in overall rates of college completion and in the separate transitions that produce completion rates using sixty years of U.S. Census data. We then explore differences in the pace of college entry and completion using forty years of data from the Current Population Surveys. These analyses demonstrate a very long-standing black male educational disadvantage that has been improving, getting slightly worse, or getting dramatically worse depending upon the time frame and whether the comparison group is white males, black females, or white females. Superimposed on the overall pattern of completion rates is a changing age-specific pattern. The long-standing male delay in age of college completion has been improving even as their overall rate of completion has been deteriorating relative to that of women. Meanwhile, the more pronounced age-specific delay in black college completion has diminished in a broad historical context, though trends in the recent period of time are less clear. These trends, the structure of transitions that produce them, and the potential role of the sharp rise in black incarceration rates on these trends are discussed in detail below.

Methods and Data

We analyze trends using decennial census data for 1940, 1950, 1960, 1970, 1980, 1990, and 2000 from the Integrated Public Use Microdata Series (IPUMS). The IPUMS includes information for both the non-institutionalized and the institutionalized population, which includes people in jails, prisons, and other group quarters. We use these data to analyze the trends in college completion by age and census year. We then

elaborate our analysis of how gender differences in rates of college completion vary over time by both age and cohort.

Ideally, we would use longitudinal data to track successive cohorts across different ages. However, such information is not available in the U.S. census, which provides only a snapshot of educational attainment at the point when the census data are collected. In the 1980 census, for example, individuals who were age 22 were born in 1958, while individuals who were age 23 were born in 1959. If the rate of completing college rises across cohorts for females, then we would expect college completion rates for 23 year olds in 1980 to be higher than for 22 year olds by virtue of being older. At the same time, we would expect college completion rates of 23 year olds in 1980 to be lower than those of the 22 year olds after they age another year (e.g., 23 year olds in 1981), by virtue of the fact that the 23 year olds in 1980 are from an earlier cohort.

To allow an estimation of age effects that control for cohort, we adjust the census data by linearly interpolating rates of college completion at each age from 22 to 28 for all birth cohorts that were not directly observable in the census. From this information we report simulated age-specific rates of college completion for cohorts that were 22 years of age in the year of each census. In other words, we report results for the 1918, 1928, 1938, 1948, 1958, and 1968 birth cohorts, which correspond to individuals who were 22 years old in the 1940, 1950, 1960, 1970, 1980, and 1990 census years and interpolate their experience through age 28. For the 2000 census, we report results for the 1974 birth cohort, using interpolated rates for age 21-25, exact rates for age 26 from the 2000 census, and extrapolated rates for age 27 and 28.³ Appendix Table A provides the raw

census data table that includes the age-gender-race-census year specific proportions completing four years of college and the sample sizes in each of these cells.

We compute the probabilities of completing high school, enrolling in post-secondary education, and completing four-year college for all observable birth cohorts of individuals who fell within the range of 22 to 28 years of age. Because the completed education at every age is known, it is straightforward to compute the proportion of a group that has completed a specific number of years of education conditional on having completed any particular educational level. This enables us to analyze differences in the rate of college completion between men and women, for whites and blacks, at any specific age, and for a particular birth cohort in terms of their relative probabilities of completing each of the transitions necessary to achieve a bachelor's degree.

Census data reveal how much education respondents have at a specific age, but they do not reveal how long it took on average to complete a particular phase of education, the age at which this phase started, or whether respondents took breaks during any phase of schooling. To fill this data gap, we use the annual October Current Population Studies (CPS) school enrollment supplements, which contain information about current enrollment status by school type and whether the respondent was in school in the previous year. We use the CPS for the years 1965 through 2005 to compare the average ages of men and women, by race, who are enrolled in postsecondary education between the ages of 17 and 28 – we exclude people who came back to school after many years in the labor market or as a homemaker -- in order to determine the pace at which the typical men and women progresses through college. Then we examine whether there

are gender differences in the propensity to interrupt postsecondary education for each racial group.

The Census and the CPS data fail to distinguish between those individuals who completed high school by obtaining a high school diploma from those who earned a General Educational Development (GED) certificate. High school graduation rates are considerably higher when measured by census or CPS data than when measured from the Common Core of Data that is reported by schools to the U.S. Department of Education (Greene and Winters 2005). Moreover, several studies have shown that students with a GED do not perform as well on a variety of labor market and educational dimensions as those who graduate from high school (Cameron and Heckman 1993; Murnane, Willett, and Boudett 1995; Maralani 2006). The proportion of young blacks that completed high school through a GED is somewhat higher than for whites (Murnane, Willett and Taylor 2000), but whether there are race differences by gender, and whether these differences are stable over time, is unknown. A more complicated decomposition that distinguishes high school diploma through graduation and high school diploma through GED might reveal some racial differences in the gender gap and trends in this gap that are not revealed by available data. Any differences between the fuller decomposition and what we are able to do with census data would involve the relative contributions to rates of college completion from graduating with a high school diploma (vs. GED) and entering postsecondary study, given a high school diploma (vs. GED).

Results

Figures 1 and 2 report female to male odds ratios of completing college using simulated cohorts as described above for whites and blacks based on the 1940-2000

IPUMS data. The white bars on the right of each figure show equal odds as a reference point. For the 1918 cohort, white male and female completion rates at age 22 are at parity, but by age 28, white females have only two-thirds the odds of completing four years of college as do white males. The initial male disadvantage is even stronger in the 1928 cohort, but the white male catch-up is stronger, too, such that the female odds of completing college are only half of the male rates by age 28. The relative low point for white females occurs around 1960. In the 1938 cohort, white females lag behind white males even at age 22 and they continue to fall behind, having only .46 the odds of completing four years of college as white males by age 28.

Thereafter, white women began a steady advance that has taken them far beyond white male educational attainment by the present time.⁴ Women of the 1948 cohort differ from those in the 1938 cohort in that they do not fall as far behind men by their late 20s, when they still have 69% of the male odds of completing four years of college. Differences for women in the 1958 cohort are even more striking; they have higher odds than white males of completing four year college at both age 22 and 23. As with the older cohorts, the 1958 female birth cohort gradually falls behind males with age, but by age 28 they still have 89% of men's odds of completing four years of college. Women in the 1968 cohort have surpassed their male counterparts in four-year college completion in this entire age range, though their lead diminishes with age, from 43% greater odds of completing a BA at age 22 to a 13% greater odds of completing a BA by age 28. For the most recent cohorts in the table (captured by the 2000 census), the white female advantage is very large: they have 72% greater odds of gaining a BA by age 22, and their advantage (37% greater odds) remains large at age 28.

FIGURES 1 AND 2 ABOUT HERE

Figure 2 shows comparable information for blacks. The results for blacks are not as stable as for whites, both because the total sample size across the seven IPUMS samples is smaller (115,119 vs. 1,109,776 for whites) and because their rate of college completion is so much lower: only between one and five percent of any specific age-cohort group completed four years of college in the earliest cohorts. It is nonetheless evident that black women have higher odds of completing college across all time points and most ages. Like white males, black males delayed college completion relative to their female counterparts, and this pattern persisted for many decades. Unlike white males, however, black men typically did not make up their educational deficit with women by the age of 28. Black men nearly reached parity according to the point estimates for the 1960 and 1970 IPUMS, but they then fell further behind black women in the three most recent censuses.

In order to obtain a clearer, more stable comparison of the educational experiences of whites and blacks, Table 1 displays the results of a logistic regression trend analysis of the census data from Appendix Table A. In this analysis, we specified age and census year to have linear effects, and we centered both of these variables (age 25 and census year 1970 were set to zero). Columns 1 and 2 report separate analyses for whites and blacks, in which we included main effects and all two-way interactions between age, year, and gender. In column 3, we combined the samples and again specified all two-way interactions between age, year, gender, and race. Column 4 contains the model with all three-way interactions present (the four-way interaction term

was not statistically significant, and was therefore not included in the specification). In all cases we report coefficients in the form of odds ratios, where unity implies no effect.

TABLE 1 ABOUT HERE

The coefficients in columns 1 and 2 parallel the trends visible in Figures 1 and 2; rates of college completion rose with age and rose over calendar time, in particular for older individuals. Within a cohort, males delayed the completion of college relative to females, while the female specific rate of completion rose across cohorts relative to that of males. The main effect of female (which applies to individuals at age 25 in 1970) is much larger for blacks than whites, but the female trend term (female*year) is much stronger for whites (1.015) than for blacks (1.003). The models also show that educational delay was larger for black males than for white males (1.128 vs. 1.116) and also for black females ($1.128*0.961=1.084$) than for white females ($1.116*0.939=1.048$).

Columns 3 and 4 allow direct assessments of trend differences between whites and blacks by combining blacks and whites into a single sample. Column 3 shows that the greater level of educational delay for blacks (1.015) is statistically significant at the .01 level, and that the advantage in college completion rates is greater for black females than for white females (1.396) and highly statistically significant. Column 3 also shows that blacks were gaining educationally across this entire period relative to whites (the coefficient for black*year is 1.005). Column 4 then adds three-way interaction effects. The relatively high black educational delay diminishes somewhat over time (.999) as does the overall level of male delay (the coefficient for female*age*year is 1.001). The last coefficient confirms the clear pattern seen in Figures 1 and 2, namely that the huge relative gender advantage that black females had in earlier years when compared with

white females diminished substantially during the last thirty years covered by the IPUMS data, as white females made dramatic gains in college completion relative to white men. In other words, whites over time began to resemble blacks in their pattern of gender difference; the age-specific odds ratios of completing college for blacks and whites for the 1974 birth cohorts are much more similar than are the odds ratios for the 1918 cohort.

In order to illuminate possible sources of the trends observed in Figures 1 and 2, we examine the three transitions prior to college completion, using the U.S. Census IPUMS data. Figure 3 shows the trends in black male and female high school completion rates, college entry given high school completion, and four-year college completion, given some college, for respondents aged 26-28 across the seven decennial censuses. The figures show fitted proportions completing each of the three transitions by birth cohort from a second-degree fractional polynomial regression of data from the 1940 through 2000 censuses. The actual data points for cohorts in the census during each of the census years are also shown in Figure 3 (similar plots for younger respondents look very similar and are not shown).

Figure 3 demonstrates that the rising black gender gap is largely attributable to the differential rates of entering post-secondary education, given high school graduation. Rates of high school completion rose substantially from 1940 through 2000, but these trends moved in parallel for the two genders. Over these same years, the rates of post-secondary enrollment also rose for both genders, but the rise was faster for women than men, with women roughly doubling their rate of post-secondary entry. This rise in post-secondary education involved both increased rates of enrollment in community colleges (Digest of Education Statistics 2005) and a weaker process of self-selection into post-

secondary education.⁵ Both of these processes probably contributed to the declining odds of completing four-year college, given college entry, for both black men and women. The fitted decline in the odds of completing four college, given college entry, was somewhat steeper for black men than for black women, but the main female advantage stemmed from their more rapid rise in transition rates to post-secondary enrollment.⁶

FIGURE 3 ABOUT HERE

Figure 4 portrays the corresponding graphs for white men and women aged 26-28. In qualitative terms, the story is the same for whites and blacks: both races experienced rising rates of high school completion and rising rates of college entry, given high school completion. Just as for blacks, white male rates of completing a four-year degree, given college entry, was constant or declining over the past thirty years, probably for the same reasons proposed above -- the rising share of post-secondary students in community college and the broadening self-selection into post-secondary education. Just as for blacks, the rising female advantage in college completion for whites is accounted for in large part by rising rates of college entry, given high school graduation. However, the gap in college completion rate trends, given some post-secondary education, is larger for whites than for blacks, and whereas the black female line trends slightly downward, the white female line trends upward. In combination with the strong gender gap in white college-entry trends, the gap in college completion trends contributes to the strong female-favorable trend in the unconditional probability of completing a four-year degree by age 26-28 for whites.

FIGURE 4 ABOUT HERE

The comparisons discussed above focus on gender within racial groups, but it is also illuminating to make comparisons between racial groups by gender. Appendix Figures 1 and 2 re-express the information presented above as a racial comparison that controls for gender (the census years are reordered relative to Figures 1 and 2 and the odds-ratio reference bars are set to 2.0 for greater clarity). These figures show that racial progress has been much greater for black males than for black females. The odds of completing college for white males were typically at least four times those of black males for all age groups in the 1940 through 1960 censuses. But black males made substantial gains relative to white males, such that by 2000 white males' odds of completing college were only slightly more than twice as high as black males' odds for all age groups. In contrast, the trend in the odds of completing college for white women relative to black women over last four decennial censuses has been stable or rising slightly to the advantage of white women.

The reason for this considerable gender difference in racial trends lies in large part in the different trajectories of white males and white females. Because white males have made relatively little progress in their rates of college completion over these years, it has been easier for black males to reduce their disadvantage in college completion relative to white males. Black females have not been able to gain in relative terms on white females because both groups of women, but especially white women, have increased their rates of college completion. As a consequence of these different trends, black males have become more like white males over time (though a large racial gap still remains) and the racial gap for males has come to resemble the racial gap for females that has been relatively stable for the past forty years.

Male Delay: Insights from CPS Data

Figures 1 and 2 showed a pattern of male delay in completing four-year college for both blacks and whites. The pattern was more extreme in the earlier cohorts, and gradually diminished in more recent cohorts. Other research shows that roughly two-thirds of all students who were ever enrolled in four-year college eventually completed four-year college, and that there has been little change in this rate from the early 1970s through the early 1990s (Barton 2002; Adelman 2004). Adelman (2004) finds a slight increase in time to bachelor's degree from the class of 1972 to the class of 1992. In a recent analysis of the 1990-1994 and 1996-2001 Beginning Postsecondary Students Longitudinal Studies, Horn and Berger (2005) find no change in the five-year bachelor's degree completion rate, but an increase in the proportion of students who persisted in their studies five years after they began postsecondary education. They also found growing proportions of students who delay in enrolling in college. These studies reveal little about gender differences in the timing and duration of four-year college.

As noted earlier, there are no doubt multiple causes of males' greater delay in educational attainment relative to females, including males' slower progression through elementary and secondary school, gender differences in early labor market opportunities, military enlistment, and academic performance in post-secondary education. While it is not possible to explore these causes using the 1940-2000 census files, with October CPS data we can determine the extent to which male delay in completing four years of college is traceable to late starts in college, slow movement through college, or gaps in college enrollment from the 1970s to the present. Table 2 shows the male-female age differences for first year college students by race, decade, and type of school. We include students who began their college careers in both two and in four-year colleges because a

significant fraction of those who attended two-year college (39% of men and 48% of women in the NELS sample according to Buchmann and DiPrete 2006) ended up completing four years of college. In the 1970s, both white and black men tended to be older than women when they began two-year college, though the age gap between first-year men and women was larger in two-year colleges than in four-year colleges. This pattern changed in the 1980s, and from the 1990s onward men generally began two-year college at younger ages than did women. In contrast, there is a small but persistent tendency for male first-year students in four-year colleges to be older than women by between one- and two-tenths of a year. The age differences are not statistically significant decade by decade, but across all the years covered by the October CPS, the age difference is statistically significant at the .001 level for whites and the .05 level for blacks (detailed results are available from the authors upon request). These statistics are consistent with Figure 1 in that they suggest a smaller female advantage in the age of starting a four-year college program for whites after the 1970s. For both whites and blacks, women's age advantage in attending two-year college diminished and then reversed over the four decades in our observation window.

TABLE 2 ABOUT HERE

Table 3 compares the mean age differences between CPS respondents who report that they are in the first year of college and those who report that they are in the fourth year of college. Panel A shows that the age difference between first year and fourth year students is generally about 10% greater for males than for females of both races. This gender difference was comparable for blacks and whites through the four decades covered by our data. Because of the cross-sectional nature of the October CPS, these age

differences cannot be interpreted easily; many of the respondents in the first year of college never make it to the fourth year of college, either because they only earn a two-year degree or because they drop out of college prior to earning a degree. Panel B of Table 3 provides greater insight by limiting the population of first year students to those who were enrolled as first year students in four-year colleges. For this population, there is no indication of male delay in the rate of progression through four-year college from the 1990s onward.

TABLE 3 ABOUT HERE

Finally, in Table 4 we address the question of whether black or white males were more likely to take breaks from college, and whether that tendency has changed over time. In the 1970s, black and white men were slightly more likely to take breaks during their pursuit of a bachelor's degree than were black and white women, respectively, but the difference is not statistically significant. Since then, men have generally been slightly less likely than women to take breaks, though the difference reaches statistical significance only in the 1980s for whites and in the 1990s for blacks.

Since the 1980s, black students of both genders have shown a greater tendency to take breaks from college than have white students. These CPS results, however, should be interpreted against the longer time frame illuminated by the seven decennial censuses. As shown in the greater-than-unity and significant age*race effect in column 3 of Table 1, the age of completion of black graduates has generally been higher than for whites, with a slight trend toward greater similarity between the races over these seven decades (cf. the smaller than unity and significant black*age*year effect in column 4 of Table 1). The CPS data on the age of first year students (see Table 2) are consistent with the census

trend estimate in showing a reduction in the racial age gap of first year students since the 1970s. Taken together, Tables 2 and 4 do not show clear evidence for any recent converging trend in the pace of college completion for blacks and whites.

TABLE 4 ABOUT HERE

The October CPS data are consistent with the IPUMS data in implying that male-specific delay in completing four year college was a larger phenomenon for both blacks and whites in the earlier cohorts than in the later ones covered by this analysis. The male lag in the 1970s is a consequence of later entry into college, more time spent in moving from the first year to the fourth year of college, and a greater tendency to take breaks from college. Since then, the positive age gap between men and women diminished when comparing first year students in four-year colleges, and reversed when comparing first year students in two year colleges. The CPS data show no clear gender difference in the trend pattern for the rate of progress through college or the likelihood of interrupting college education.

Incarceration and the Racial Gender Gap

Incarceration rates in the United States held stable between 1925 and 1975 at roughly 100 per 100,000 of the resident population; but after 1975 the incarceration rate increased rapidly and by 2001 it was 472 per 100,000, nearly 5 times its historical average (Langan 1991; Pettit and Western 2004). The IPUMS data are representative of the entire population including young people who were in jail or prison at the time of the data collection. As a consequence, the results in Figures 1 and 2 and in Appendix Table 1 incorporate the sharp increase in the size of the incarcerated population since the late

1970s. Nevertheless, it is revealing to consider the potential influence of the incarceration trend on the changing gender gap in college completion.

Determining the arithmetic (as opposed to the causal) impact of the rising incarceration trend on computation of college completion rates is straightforward; to do so, we compare the year specific rates of college completion estimated only for the non-institutionalized population with the estimate of completion rates obtained for the total population. The Current Population Surveys provide estimates of (and are administered only to) the non-institutionalized population. Estimates of the number of inmates in state prisons and federal correctional facilities by race, gender, education, and age were obtained from the Surveys of Inmates in State and Federal Correctional Facilities for the years 1974, 1979, 1986, 1991, 1997, and 2004. Using these survey data, we computed the number of individuals in each race, gender, education, and age subgroup, and then interpolated the results for the intermediate years. Available information for the jail population from the various National Surveys of Jails conducted during this period by the Bureau of Justice Statistics is less complete and does not allow a joint breakdown across race, gender, education and age. We therefore simply assumed that the jail population matched the prison population in its race, gender, education, and age composition, and scaled up the size of the prison samples to correspond to the size of the combined prison and jail population in each year. Finally, we rescaled the combined prison and jail samples so that they were the same proportion of the population as were the CPS samples and then combined the data sets in order to estimate rates for the total population.

The addition of the prison and jail data to the CPS data has a noticeable effect on the computed rates of college completion for black males in particular, both because a

considerable proportion of the population of young black males was in prison or jail in these years and because the incarcerated population had relatively low levels of education. Figure 5 shows that the black gender gap is noticeably larger when accounting for the incarcerated population. Moreover, the impact of the incarceration adjustment grows larger for blacks over time because the size of the incarcerated black population as a fraction of the total black population has grown over time.⁸

FIGURE 5 ABOUT HERE

Ascertaining the causal effect of the rise in incarceration of young males and especially young black males on the growing gender gap in college completion is much more difficult. In one respect, the adjustments in Figure 5 understate the magnitude of the prison experience of black males because they only pertain to individuals who were *currently* in prison or jail at the time of the survey. Many other individuals who were interviewed in the CPS in each of these years had experienced a period of incarceration in the past. The impact of these past and current incarceration spells on educational attainment, i.e., how much education would these young males have achieved if they had not spent time in jail or prison, is unknown. Our analysis of the prison and jails surveys confirms that the young people who are sentenced to time in jail or prison were disproportionately high school dropouts. Other evidence (Sampson and Laub 1993; Arum and Beattie 1999) shows that when enrolled in school, these young people were performing poorly in school at the time of their arrest. Because these individuals are drawn disproportionately from the bottom of the educational achievement distribution, one could conclude that very few of them would have gone on to college or earned a bachelor's degree even if they had not ever been incarcerated. From this perspective,

rising rates of incarceration may have contributed only modestly to the continued rise in the gender gap in educational achievement for blacks, which – to repeat – is itself relatively modest compared with the situation for whites. Further indirect evidence that the rise in incarceration has not had a decisive impact on the changing gender gap in college completion for blacks comes from a comparison of Figures 1 and 2. As noted earlier, the gender gap for blacks is now more similar to that for whites than it was in the 1950s and 1960s, even as the incarceration experience for young black males diverged from that of young white males.

Indisputably, young black males' incarceration experiences have a major impact on their early adulthood experiences, especially those related to work, cohabitation, and marriage. Incarceration has also probably affected high school graduation rates and rates of post secondary enrollment of black males. While the incarceration rate is highest for high school dropouts (Harlow 2003), we do not know what proportion of black males without high school diplomas would have earned them but for incarceration, nor do we know what proportion of black males with a high school diploma or GED earned their credentials in jail or prison. Therefore we cannot rule out the possibility the gender differences in incarceration rates play a role in the growing black gender gap in the transition from high school to college.

Furthermore, while prison per se may not contribute much to lower rates of college completion, prison experience is often an indicator of underlying behavioral problems that themselves may have interfered with any possibility of college attendance or completion. These behavioral problems, however, would likely not display the same trend as incarceration rates; available evidence suggests that the incarceration trend was

due partly to a rise in drug use but partly to the specific response of the criminal justice system to crack cocaine possession, which occurred disproportionately in the black population (Stoll 2005).

Census data show that black males reduced their disadvantage against black females in the 1960-1980 period relative to the earlier census data but then fell further behind after 1980. This pattern may be due to the forces that have propelled women through higher education in greater numbers, or they could be connected with the social problems that have increased the incarceration rate for black males during this period. This important question cannot be addressed by census and CPS data, and clearly requires further research.

Discussion

In recent years, research has begun to focus on the strong trend toward female dominance in educational attainment. Our analyses of the IPUMS data demonstrate that this story is largely about whites. White males had far higher rates of college completion than white females by age 28 through the early 1950s, but since then have failed to keep up with the college completion gains of white women, and consequently have fallen behind in relative terms at a much faster relative rate than have black males. White women have gained relative to white men at all the educational transitions that lead to completion of four-year college, even as their strong lead relative to male BA graduates of finishing at younger ages has eroded. The patterns of rising age-specific college completion gaps over time, and of a distinct but weakening tendency for males to finish college at later ages than females are true for both whites and for blacks. These patterns underscore the

historical importance of considering age in any comparison of educational attainment rates.

Our findings also raise the question of why the historical female advantage in early completion has diminished even as the age-specific female advantage grows ever stronger over time. Three probable reasons for taking longer to complete college are socioeconomic (college is costly), academic (college academic work is difficult), and environmental (the labor market and the military provide alternative opportunities). On average, women and men come from similar socioeconomic backgrounds, but women and men have historically had very different experiences with regard to academic preparation. Women of comparable academic performance were much less likely to attend college than males as recently as the 1970s (Alexander and Eckland 1974), but this pattern essentially disappeared by the early 1990s (Buchmann and DiPrete 2006). Over time it appears that women and men are converging at the margin of college attendance in terms of academic preparation, and this may play a role in the convergence of the age pattern of completing college. The final plausible explanation lies in the environment. Historically, young men have had very different opportunities in the labor market and the military than women, which would likely explain a considerable part of the greater time to completion for men. The convergence of labor market opportunities for men and women may therefore be a cause of the convergence of the age pattern for college completion. Additional research is needed to determine the impact of each of these factors on the pace as well as the rate of college completion for those who make the transition to college.

In light of the sharp increase in incarceration rates for black males, it is remarkable that the female gain among the African-American population has been relatively small in comparison to the tremendous relative gains made by white females. Clearly, however, African-American males are the most disadvantaged of the four population groups studied here. Despite the converging trends between blacks and whites, black men still lag behind black women more than white men lag behind white women. The overall black-white gap remains very large and shows no signs of closing in the foreseeable future. It follows that black men lag dramatically behind white women in their educational attainment. The 13% college completion rate of 28 year old black men in 2000 is three times as high as was the 4% completion of 28 year old black men in 1960, but it is much less than half of the 33% college completion rate of 28 year old white women in 2000 (see Appendix A). To reach that level will require additional gains into the future that are as dramatic as the 40 years of gains stemming from the civil rights movement and its aftermath.

While black men remain at a particular educational disadvantage, their relative progress in the recent past far outstrips that of white males. Black males made dramatic gains in educational attainment in every decade covered by this analysis, even during the years when the incarceration rates of young black males were rising sharply. In contrast, the educational attainment of white males surprisingly has stagnated for 20 years while white women increased their educational attainment at a rate even faster than that of black women. White men certainly had a strong incentive during these years to increase their educational levels; between 1973 and 1995 the average hourly wage of male high school graduates fell in real terms by 17% even as the average hourly wage of male

college graduates was generally rising (Appelbaum, Bernhardt and Murnane 2003). Yet, despite these sharply rising incentives, white males failed to increase their rate of transitioning from secondary school to college in sufficient numbers, and those who made this transition failed to complete four-year college in sufficient numbers to match the upward trajectory of any of the other three groups.

Black males are on an upward trajectory, but their trajectory is rising too slowly to catch up with either black or white females in the foreseeable future. White males are on a plateau that shows little upward momentum at all. Demographic data can demonstrate these shortfalls quite clearly, but behavioral models are required in order to understand why these shortfalls persist, and whether any policies have a realistic prospect for altering substantially the future gender gap in both races that is strongly suggested by current demographic trends.

Notes

¹The status dropout rates is defined as the proportion of persons aged 16-24 who are not in school and have not earned a high school diploma or a GED.

² In a study of high school graduates who served in the armed forces during the peacetime cold war, MacLean (2005) found that veterans were less likely to get college degrees than were non-veterans at all levels of socioeconomic status. Even among men who reported that they planned to go to college, military service reduced the odds of obtaining a college degree, with the effect being present for draftees and non-draftees alike. This finding accords with the idea that military service may compete with higher education for young men who enter military service after completing high school. The study used data from the WLS, which are not the most suitable data for examining racial differences.

³We simulate using the 1974 instead of the 1978 birth cohort in order to avoid excess extrapolation.

⁴Men who were 22 years of age in 1970 were born in 1948 and this cohort was centrally involved in the Vietnam War. Klein [1984] reported that many Vietnam war veterans delayed college completion well past age 28.

⁵Buchmann and DiPrete (2006) found that students who begin in community college are significantly less likely to earn a four-year degree than students who begin in a four-year college, even though a considerable fraction of community college students do eventually transfer to four-year institutions.

⁶ Black males are more likely than black females to complete high school via a GED than via earning a high school diploma (Dynarski 2007), and this difference may be important in accounting for the gender gap in the transition to post secondary education, especially if the gender gap in high school completion via the GED is itself a rising trend.

⁸ We do not show comparable graphs for whites only because the magnitude of the correction for the white population is small. Graphs for younger black males look generally similar to the graph for black males in the 26-28 age range.

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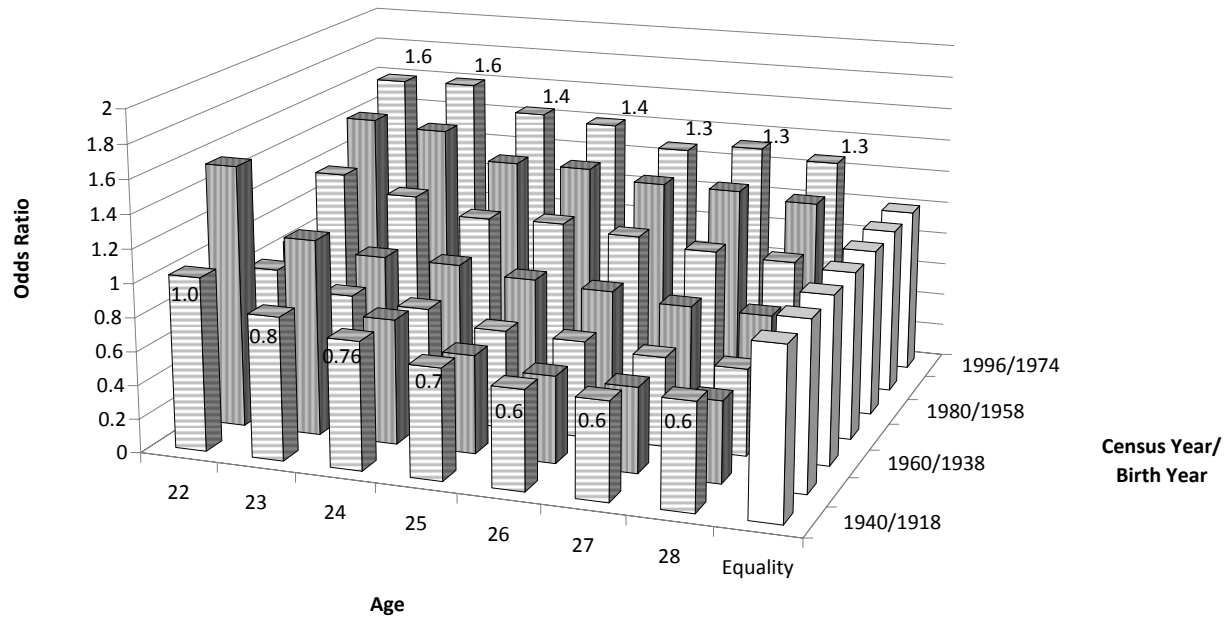
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Figure 1: Changing Odds Ratios of Completing College, White Females to White Males



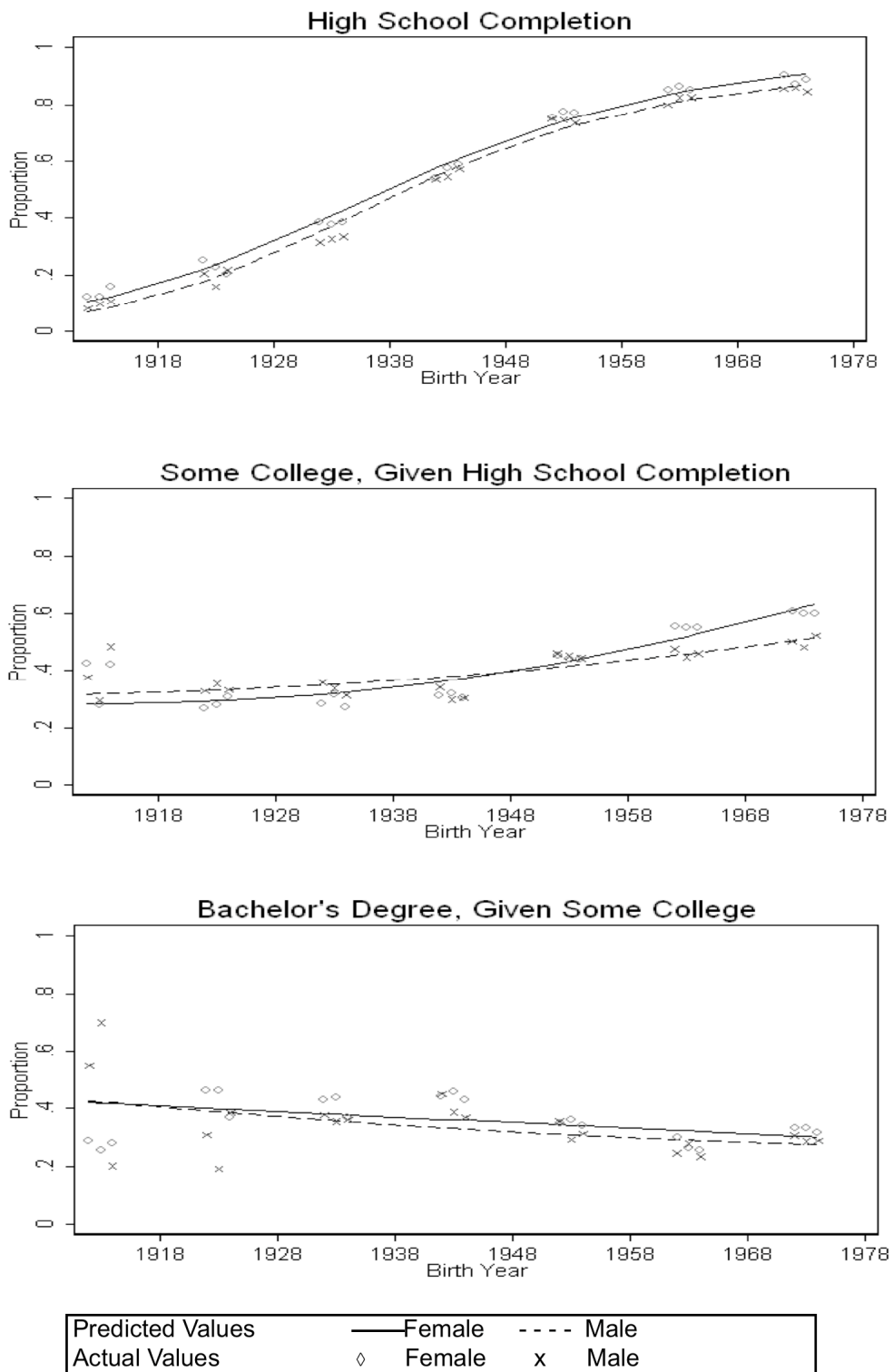
Source: 1940-2000 IPUMS, interpolated age-specific rates by cohort
(extrapolated for 1974 cohort)

Figure 2: Changing Odds Ratios of Completing College, Black Females to Black Males



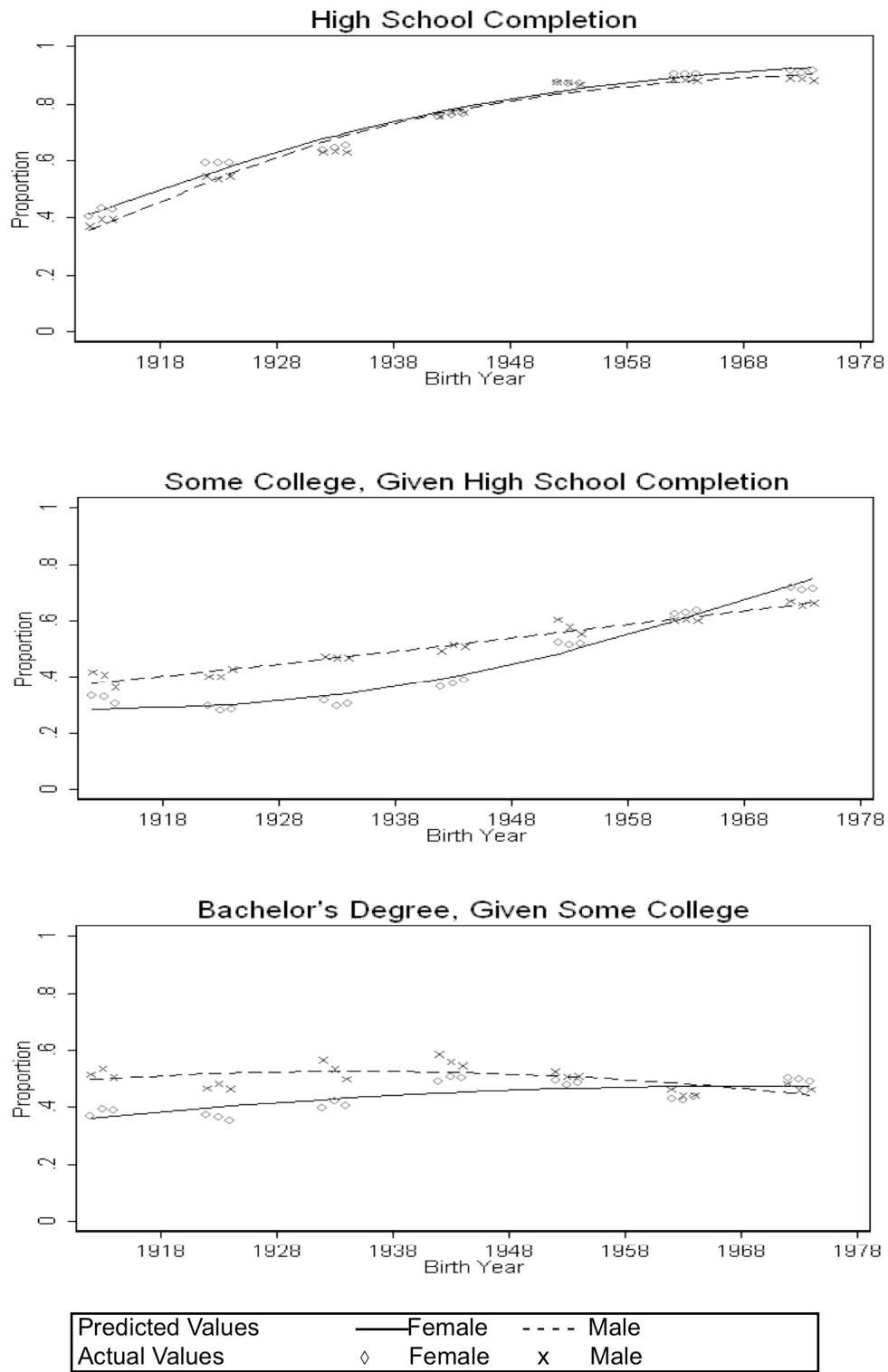
Source: 1940-2000 IPUMS, interpolated age-specific rates by cohort (extrapolated for 1974 cohort)

Figure 3: Educational Transitions for Blacks, Aged 26-28



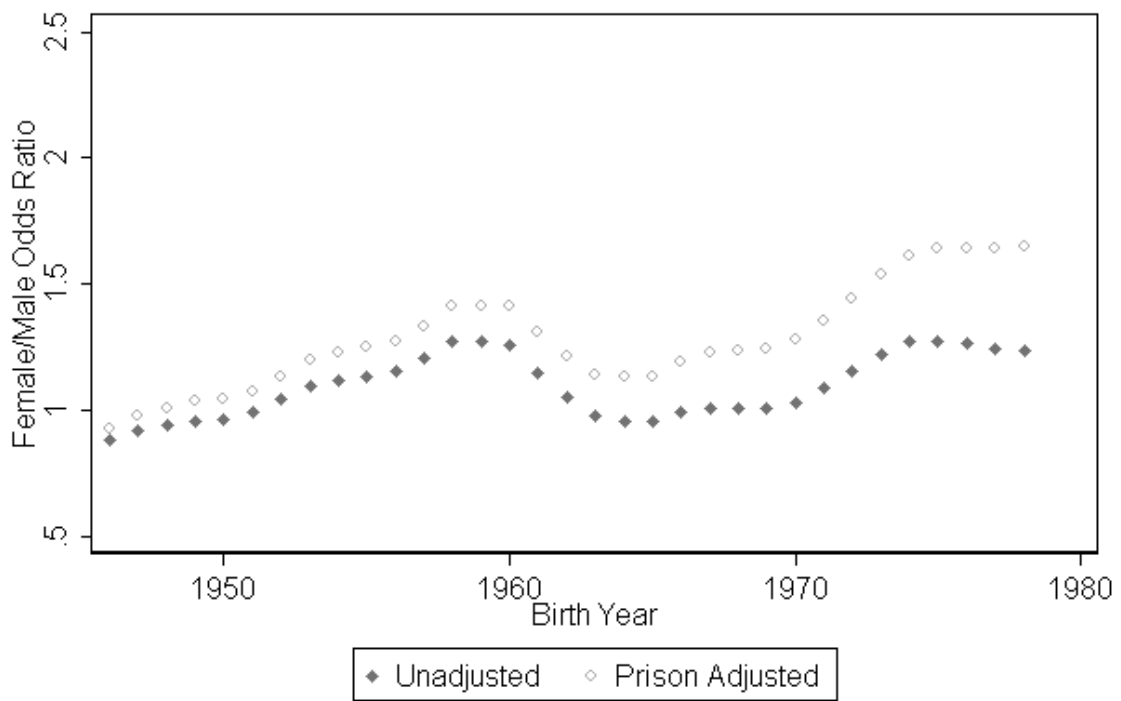
Source: 1940 - 2000 IPUMS

Figure 4: Educational Transitions for Whites, Aged 26-28



Source: 1940 - 2000 IPUMS

Figure 5: Odds Ratios of BA Completion for Blacks Age 25-28



Mean and Median Smoothed. Source: October CPS 1974-2005

Table 1: Logistic Regression for the Probability of Completing Four-Year College by Age, Year, Gender, and Race

	Blacks	Whites	Combined	Combined
age	1.128*** (.01)	1.116*** (.0021)	1.116*** (.0021)	1.120*** (.0023)
year	1.030*** (.001)	1.019*** (.00021)	1.019*** (.00021)	1.019*** (.00021)
age*year	1.001*** (.00031)	1.002*** (.000076)	1.002*** (.000074)	1.001*** (.0001)
female	1.356*** (.037)	0.825*** (.005)	0.830*** (.005)	0.825*** (.005)
female*year	1.003* (.0013)	1.015*** (.00031)	1.014*** (.0003)	1.015*** (.00031)
female*age	0.961*** (.0094)	0.939*** (.0024)	0.941*** (.0023)	0.931*** (.0028)
black			0.295*** (.0053)	0.269*** (.0058)
black*female			1.396*** (.028)	1.649*** (.046)
black*age			1.015** (.005)	1.015 (.0093)
black*year			1.005*** (.00065)	1.012*** (.001)
black*age*year				0.999* (.00032)
female*age*year				1.001*** (.00015)
female*black				1.019 (.01)
female*black*year				0.988*** (.0013)
N	155119	1109776	1264895	1264895

Exponentiated coefficients; Standard errors in parentheses
 ="* p<0.05 ** p<0.01 *** p<0.001"

Source: IPUMS Files, 1940-2000

Table 2: Male - Female Age Difference, First Year Students
by Decade and Type of School

		2 Year College			4 Year College		
		Blacks	Whites	B-W	Blacks	Whites	B-W
1970s	Male	21.04	20.18	+***	19.21	18.81	+**
	Female	20.31	19.79	+**	19.08	18.54	+***
	Male-Female	0.72**	0.39***	+***	0.13	.28***	+***
	N	650	5,340		815	7,352	
1980s	Male	20.54	20.18		19.41	18.88	+***
	Female	20.45	20.35		18.97	18.78	
	Male-Female	0.09	-0.16*		0.44*	0.10	+***
	N	728	6,273		782	6,539	
1990s	Male	20.28	20.35		19.45	19.15	+*
	Female	20.91	20.35	+**	19.28	19.04	+*
	Male-Female	-0.63**	-0.22*	+**	0.17	0.10	+**
	N	758	4,970		842	6,539	
2000s	Male	19.96	20.28		19.58	19.25	
	Female	20.90	20.28	+**	19.44	19.11	
	Male-Female	-0.94***	-0.31**	+**	0.14	0.13	+**
	N	451	2,729		543	4,271	

* p<0.05 ** p<0.01 *** p<0.001

Source: October Supplement to the Current Population Survey
Sample sizes are the sum of observations across surveys within each decade

Table 3: Difference in Mean Age of CPS Respondents in their Fourth Year and their First Year of College, by Gender, Race, and Decade

A. Including 1st Year Students in 2 and 4 Year Colleges				
	Black Women	Black Men	White Women	White Men
1970s	2.35	2.49	2.65	2.88
N	1,372	1,097	11,407	13,436
1980s	2.74	3.12	2.60	2.98
N	1,373	987	11,551	11,098
1990s	2.58	2.83	2.78	3.02
N	1,358	910	9,680	8,904
2000s	2.66	3.17	2.74	2.98
N	857	553	5,962	5,188

Gender Gap as Percent of Female Age Difference

	Blacks	Whites
1970s	106%***	108%***
1980s	114%***	115%***
1990s	109%	109%***
2000s	119%	109%***

B. Including only 1st Year Students in 4 Year Colleges				
	Black Women	Black Men	White Women	White Men
1970s	2.77	3.10	3.12	3.43
N	607	472	4,988	5,537
1980s	3.56	3.59	3.40	3.60
N	799	688	7,255	7,734
1990s	3.40	3.22	3.39	3.48
N	884	608	6,894	6,526
2000s	3.38	3.33	3.23	3.27
N	556	380	4,360	3,872

Gender Gap as Percent of Female Age Difference

	Blacks	Whites
1970s	112%	110%
1980s	101%	106%
1990s	95%	103%
2000s	99%	101%

* p<0.05 ** p<0.01 *** p<0.001

Source: October Supplement to the Current Population Survey
 Sample sizes are the sum of observations across surveys within each decade

Table 4: Proportion of Respondents Enrolled in Post-Secondary (2 or 4 year) in their 2nd through 4th Year of College Who Report That They Were Not in School Last Year by Gender, Race, and Decade

	Black Women	Black Men	White Women	White Men	Race Difference (Z statistic)
1970s	9.1%	9.5%	9.4%	9.6%	0.7
N	1,496	1,370	13,495	17,873	
1980s	13.9%	13.0%	11.5%*	10.5%	3.6
N	1,784	1,270	14,792	14,790	
1990s	12.2%*	9.7%	8.6%	8.3%	4.2
N	1,726	1,114	13,240	12,260	
2000s	12.9%	13.9%	9.5%	9.2%	4.7
N	1,177	640	8,418	7,085	

*p < 0.05

Source: October Supplement to the Current Population Survey

Sample sizes are the sum of observations across surveys within each decade

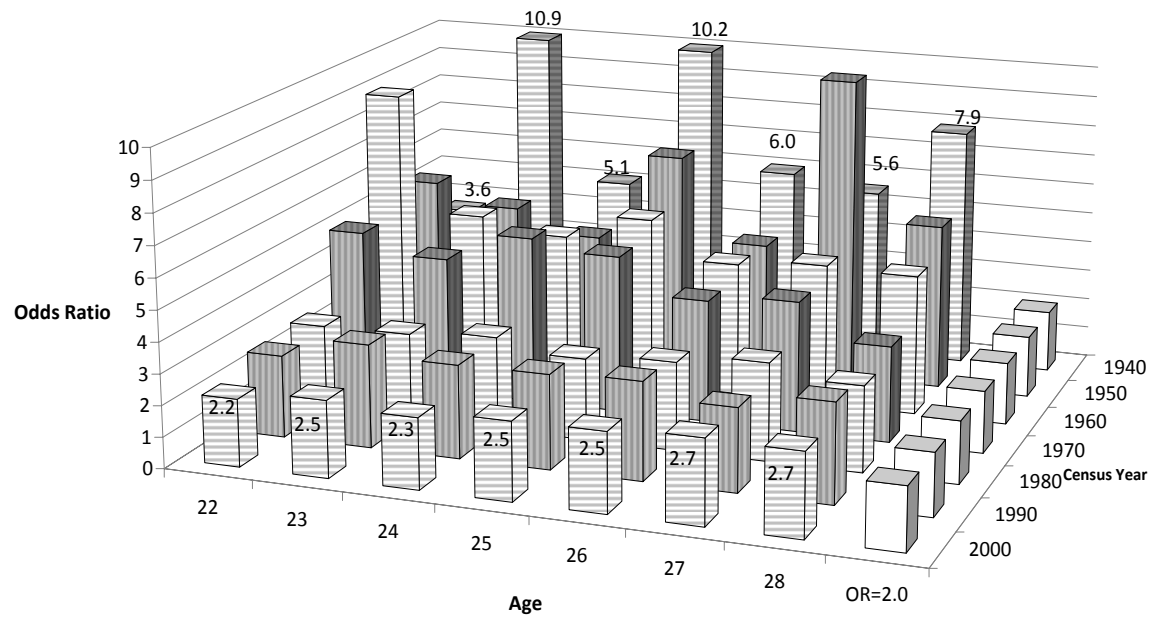
Appendix A: Proportion Completing Four-Year College, by Age, Gender, Race, and Census Year, Raw Data

White															
Age		1940		1950		1960		1970		1980		1990		2000	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
22	%	0.0416	0.0427	0.0435	0.0663	0.0842	0.0699	0.142087	0.1235214	0.0963	0.1118	0.1094	0.1494	0.0906	0.1461
	N	10306	10525	3077	3272	9434	9516	14519	15471	17119	17514	13073	12739	12264	11974
23	%	0.0606	0.0490	0.0643	0.0801	0.1227	0.0876	0.1975707	0.1636127	0.1691	0.1761	0.1775	0.2271	0.1739	0.2643
	N	10221	10372	3109	3294	9241	9353	14572	15390	16971	16689	13633	13503	12058	11460
24	%	0.0662	0.0505	0.0848	0.0674	0.1305	0.0885	0.2039665	0.1670571	0.201	0.1913	0.2087	0.2334	0.2214	0.3011
	N	10236	10394	3136	3310	9197	9563	11345	11954	16907	16946	14032	13758	11874	11592
25	%	0.0732	0.0509	0.0925	0.0591	0.1402	0.0797	0.2063084	0.1535041	0.2191	0.2076	0.2209	0.2441	0.2482	0.3213
	N	10271	10409	3243	3483	9428	9786	11667	12143	16721	16449	15113	15403	12087	12018
26	%	0.0753	0.0503	0.1082	0.0595	0.1467	0.0804	0.214023	0.1509692	0.245	0.2206	0.2345	0.2512	0.2703	0.3232
	N	9897	10345	3162	3478	8962	9290	12237	12433	16101	16355	15794	15907	11849	11737
27	%	0.0837	0.0524	0.1039	0.0608	0.1584	0.0812	0.2216788	0.1452117	0.2568	0.2158	0.2354	0.241	0.2674	0.322
	N	9756	9852	3146	3487	9344	9585	12676	12802	15996	16063	16243	16300	12626	12690
28	%	0.0770	0.0529	0.1025	0.0654	0.1683	0.0796	0.2190791	0.1347943	0.2776	0.2273	0.2468	0.2433	0.2876	0.3311
	N	9741	9998	3269	3563	9442	9799	11206	11499	15351	15641	15889	16191	13411	13529
Black															
Age		1940		1950		1960		1970		1980		1990		2000	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
22	%	0.0118	0.0199	0.0085	0.0261	0.0101	0.0263	0.0316	0.0401	0.0373	0.0650	0.0444	0.0583	0.0440	0.0805
	N	1136	1344	355	421	1186	1259	1613	1922	2492	2752	1877	2105	2310	2440
23	%	0.0059	0.0073	0.0144	0.0344	0.0264	0.0468	0.0523	0.0678	0.0678	0.1049	0.0610	0.0916	0.0787	0.1256
	N	1079	1296	347	407	1098	1219	1435	1813	2404	2707	1872	2158	2133	2327
24	%	0.0137	0.0258	0.0229	0.0270	0.0307	0.0401	0.0450	0.0726	0.0772	0.0998	0.0809	0.1105	0.1114	0.1520
	N	1092	1292	349	408	1106	1322	1379	1583	2357	2726	1876	2198	2082	2365
25	%	0.0077	0.0131	0.0144	0.0245	0.0284	0.0458	0.0483	0.0652	0.0964	0.1152	0.0856	0.1164	0.1164	0.1748
	N	1179	1340	347	449	1089	1288	1304	1641	2293	2726	2024	2319	2054	2309
26	%	0.0134	0.0211	0.0279	0.0230	0.0379	0.0386	0.0642	0.0764	0.1024	0.1155	0.0888	0.1209	0.1272	0.1688
	N	1022	1304	358	434	1057	1217	1308	1577	2216	2494	2007	2382	1944	2343
27	%	0.0162	0.0121	0.0108	0.0293	0.0392	0.0523	0.0630	0.0841	0.0988	0.1242	0.1034	0.1255	0.1192	0.1757
	N	1085	1171	371	409	1149	1337	1380	1558	2115	2488	1974	2356	2039	2457
28	%	0.0105	0.0165	0.0207	0.0313	0.0426	0.0470	0.0830	0.0743	0.1223	0.1197	0.0934	0.1429	0.1319	0.1841
	N	1080	1322	384	416	1009	1296	1217	1426	2011	2305	1953	2407	2201	2536

Source: Census data for 1940, 1950, 1960, 1970, 1980, 1990, and 2000.

Note: Sample sizes for 1950 are much smaller than other years due to sampling frame (uses sample-line not universal frame - has been weighted accordingly)

**Appendix Figure 1: Odds Ratios of College Completion,
White Males to Black Males**



**Appendix Figure 2: Odds Ratios of College Completion,
White Females to Black Females**

