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Abstract

It is often asserted 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. Analysis of historical data from the U.S. Census IPUMS Samples shows that the gender gap in college completion has evolved differently for whites and blacks. Historically, the black female advantage in educational attainment is linked to more favorable labor market opportunities and stronger incentives for employment for educated black women. Males of both races have tended to delay completion of a college degree, but this pattern is disappearing as the striking educational gains of white women have caused the racial patterns of gender differences in college completion rates to grow more similar over time. Blacks in general and black males in particular continue to lag far behind whites in their rates of college completion. While some have linked the disadvantaged position of black males to their high risk of incarceration, our estimates suggest that incarceration has a relatively small impact on the black gender gap and the racial gap in college completion rates for males in the U.S.

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“We have more work to do when more young black men languish in prison than attend colleges and universities across America.”

In June 2007, then presidential candidate Barack Obama made this comment at an NAACP Democratic Candidate Forum (Dobbs 2007). The statement was incorrect; in fact the latest data available at the time indicated that two and a half times as many young black men aged 18-24 were enrolled in college than in prison,¹ but it is a prime example of the prevalent perception of a crisis in the education of black males in America. These concerns are echoed in a growing academic literature on black males' education (Davis 2003; Lopez 2003; Ogbu 2003; Mandara 2006; Reynolds and Burge 2008; Downey 2008), including a recent issue of the *American Behavioral Scientist* devoted to African American male crisis in education (Jackson and Moore 2008). A special report on “The Ominous Gender Gap in African American Higher Education” in the *Journal of Blacks in Higher Education* reported that “if we project into the future the losses that black men have consistently logged over the past twenty years, by the year 2097, women will earn all the bachelor's degrees awarded to blacks in the United States” (Cross 1999:6).

On the issue of black males' education in the United States, sorting out hyperbole from reality is difficult. It is hindered by the lack of knowledge of trends in college completion and the educational milestones that contribute to college completion over time for different race/gender groups. On the one hand, it is well known that black males trail black females on a range of key educational outcomes including graduating from high school, enrolling in college

and completing college. In any given year since 2000, among black college degree recipients, no less than 66 percent are women (Snyder and Dillow 2009: Table 284). Such facts appropriately spark concern about the educational progress of black males relative to other groups. But they also raise important questions: How longstanding is the black female advantage in college completion? Is it a recent phenomenon, as it is for whites, or have black women long outpaced men in their receipt of college degrees? How has the size of gender gap in college completion among blacks compared to that among whites over the last century? When we consider a broader age range, say young adults in their 20s, does the picture change? Do black men take longer to earn their degrees but catch up to black women as they age? How do patterns of delay in college completion compare for blacks and whites, men and women?

The current study answers these questions by describing how black men's and women's college completion evolved over the last 70 years and comparing these trends to those for whites. Some prior research has examined race and gender differences in college enrollment over short periods of recent history. Hauser (1993) analyzed rates of college entry by gender and race using October CPS data from 1972 to 1988. Cohen and Nee (2000) examined enrollments by gender and race from the mid-1970s to the mid-1990s from the *Digest of Education Statistics*. In contrast, this is the first study to use U.S. census data from 1940-2000 along with data through 2007 from the American Community Survey to assess long-term historical trends in gender gaps in college completion for blacks and compare them to those for whites. Thus it illuminates racial differences in the gender gap prior to the 1970s, when white women began the process of overtaking white men in college completion, as well as in more recent decades. In addition, we examine several of the forces that are likely shaping these trends. We compare college completion rates for black and white women and men to varying incentives and resources to

attend college and show how racial differences in the gender-specific incentives for higher education are consistent with race specific trends in the gender gap in college completion over the period when, due to racial segregated labor markets, black and white graduates had differential access to opportunities for employment and high status occupations.

Then in order to attain a thorough understanding about how and when men fall behind women in college completion and how the process has changed for different groups over time, we examine historical trends in gender differences in the educational transitions that lead to a college degree (i.e. enrolling in college) and age-delay in completing college. Little is known about gender- or race-specific trends in delay that affect the age of college completion. Age-specific rates of college completion provide insight into whether specific groups are delaying college completion or not and whether they eventually catch-up by earning their degrees at later ages. This is the first study to examine historical trends in delaying college enrollment and completion; as such, it provides a more complete view of how these processes have changed over time for different groups than prior research.

Finally, we consider the degree to which rising incarceration rates among black men may have affected the gender gap in college completion among blacks. From the mid 1970s to today, incarceration rates rose sharply and a disproportionate number of black men are in prison and jail (Langan 1991; Pettit and Western 2004). To the best of our knowledge, no research estimates the effect of black men's incarceration on the black gender gap in college completion. We use the Current Population Survey coupled with data from the Surveys of Inmates in State and Federal Correctional Facilities to illustrate the magnitude of the potential effect of incarceration. Then we use data from the National Educational Longitudinal Study of 1988 along with

published results in the literature to argue that incarceration is more consequential for earlier educational transitions than for college completion.

Taken together, the examination of historical trends in college completion rates, along with the occupational opportunities for college graduates, the trends in educational transitions, the pattern of age-delay in college completion and the potential impact of incarceration on these trends provides insights into how and why gender gaps in college completion for blacks and whites evolved from the 1940s to the present day.

Historical Trends in College Completion by Gender and Race

Among whites, women surpassed men in bachelor degree completion for the first time in the mid 1980s. But 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 (Cross 1999). When the Census Bureau began tracking bachelor's degrees by race and gender in 1974, women earned 57% of all degrees awarded to blacks (Cohen and Nee 2000). These statistics suggest that the historical trend in college completion for blacks is not marked by the reversal of a gender gap that once favored males, as it is for whites, but rather entails a longstanding female advantage in the likelihood of completing college. To determine whether this is the case, we examine historical trends in the college completion by race and gender, focusing on how the black and white gender gap in college completion evolved over time. We are not able to determine empirically the complex sources of these trends. Rather, we draw from a diverse literature on historical changes regarding incentives and resources for groups to complete college and analyze trends in labor force participation and

occupational attainment by race and gender in order to develop plausible explanations for the trends in college completion rates.

We analyze trends in college completion using decennial census data from 1940 to 2000 from the Integrated Public Use Microdata Series (IPUMS). The IPUMS provides information for both the non-institutionalized and the institutionalized population, which includes people in jails, prisons, and other group quarters. With these data we also analyze trends in college completion by age and census year and elaborate how gender differences in rates of college completion vary over time by both age and cohort. The sample is limited to blacks and non-Hispanic whites. Because of changes in how the Census collected and coded race over time, prior to 2000 the “black” group includes individuals who identify as African American or black (including Hispanics). In 2000, the “black” group includes any individual who identifies as black plus any individual who identifies as bi- or multi-racial with one of their races being black or African American. We generally limit our sample 22 to 28 year-olds in order to estimate college completion rates among individuals who should have completed a college degree in the recent past – relative to the time of data collection – and thereby exclude consideration of degree attainment in later adulthood.

Gender- and race-specific variation in college completion rates by age is an important element of the story, but we begin more simply by displaying in Figure 1 the trends since 1940 in the proportion of 22-28 year olds completing college. Notably, trends in the gender gap are markedly different for blacks and whites. The pattern for whites is marked by a reversal of the gender gap. A larger portion of white men completed college than women from 1940 until about 1980. White women's rates of college completion increased in every decade since 1940 and especially from 1960 onward. The percentage of white women earning a bachelor's degree

nearly quadrupled from 8 percent in 1960 to 31 percent in 2000 and women surpassed men in college completion in the mid 1980s.

FIGURE 1 HERE

The trend for blacks is quite different. At no point from 1940 to 2000 did a larger proportion of black men complete college than black women. Less than 1% of black men earned a college degree in 1940, compared to less than 2% of black women. By 2000, approximately 10% of black men and 15% of black women aged 22-28 completed college. Blacks' rates of college completion have steadily risen over time, but at a more rapid pace for women than men. For blacks, women have held a consistent advantage in college completion over males for more than 70 years, whereas for whites, women's advantage in college completion over males emerged in recent decades.

Greater insights are gained when we examine this 60 year period in three phases: the period prior to 1950, the 1950-1980 years, and the period from 1980 onward. The early 1900s up until about 1950 was marked by gender similarity for blacks and whites, with higher rates of college completion for whites than blacks. Evidence indicates that during the first three decades of the twentieth century, when very few people completed college, men and women graduated from college at roughly equal rates (Fischer and Hout 2006; Rury 2009). Even by 1950 gender gaps in college completion remained small; white females trailed white males by only 2 percentage points, and black males trailed by females by 1 percentage point.

From 1950 onward, a sustained period of economic growth and the expansion of higher education served to raise the college completion rates of all groups, albeit at very different velocities. Between 1950 and 1980, the gender pattern for whites was one of divergence and then convergence. Males pulled well ahead of females between 1950 and 1960 and maintained a

large advantage until 1970. The reasons for the upward trend in white men's bachelor degree rates between 1950 and 1970 are complex, but one factor may have been the GI Bill, which began in 1944 and offered educational benefits to veterans of World War II and later the Korean War (Bound and Turner 2002; Stanley 2003). Another factor was doubtless the expansion of demand for college graduates in male-dominated corporate jobs in management, engineering and other professions. Indeed, Stanley (2003) shows that the trend in male BAs after WWII was along the same trajectory that had already been established in the 1936-1940 period, and is thus consistent with an interpretation that the GI bill's main effect was to offset the direct negative effect on educational attainment that would have been produced by military service during the years when some GIs otherwise would have been enrolled in college.

Beginning in the 1960s, college draft deferments during the Vietnam War were also a factor underlying the steady increase in men's college completion rates (Goldin and Katz 2008) that was continuing to be fueled by the combination of increased family wealth, growing capacity in the American university system, and rising demand for college-educated workers in the American labor market (Fischer and Hout 2006).

White women's gains were also substantial during this period. Undoubtedly, one source of the rising rates of college completion among white women was their rising labor force participation, particularly in professions requiring some higher education. Women increased their labor force participation rate from 20 percent in 1900 to 60 percent in 2000 (Fischer and Hout 2006) and the sources of this remarkable trend are well documented elsewhere (Matthei 1982; Goldin 1990). Women's movement into occupations requiring some form of higher education – teaching, nursing, and white-collar clerical work – served to boost their incentives to earn a college degree. In the early decades of the twentieth century the teaching profession

became rapidly feminized and many women were employed as teachers in the nation's schools. School administrators' preferences for unmarried female teachers created an almost constant demand for new teachers; as women left the profession upon marriage, younger women stepped into fill their ranks (Rury 2009:110). By the early 1940s, the pervasive marriage bars that barred the employment of married women were almost completely eliminated and married women entered the labor force in greater numbers (Goldin 2006). Later, the civil rights and women's movements, which brought legislative and cultural changes, coupled with contraceptive technologies that enabled women to control their fertility lead to increased incentives and reduced barriers for women to go to college and pursue careers (Goldin and Katz 2001). Between 1970 and 1980, college completion rates for white males and females converged as male enrollments stagnated but female enrollments continued to rise.

For blacks, the period from 1950 to 1980 was one of continued gender similarity, with both males' and females' college enrollment rates growing very slowly in the decades between 1950 and 1980. The much lower rate of college completion for blacks than whites was due in part to the lack of educational resources devoted to blacks, especially in southern states where the majority of the nation's blacks resided (Rury 2009). Black men in the south were also less able to benefit from the GI bill. While the GI bill was race neutral in statutory terms, in southern states, segregation and severely limited state investment in the colleges that were accessible to blacks restricted the extent to which black veterans in the south were able to use GI benefits to obtain a college degree (Turner and Bound 2003). Thus throughout much of the middle-twentieth century, college completion rates of blacks --especially those of black males--were likely constrained by lack of resources including access to education and sources of funding to pay for it. At the same time, very different structures of occupational opportunities for blacks

and whites and men and women likely created different incentive structures for each group. Midcentury, when racial discrimination and segregation in employment remained the norm, blacks may have had limited incentives to obtain a college degree.

To compare how college completion rates may be related to employment rates and occupational opportunities, we examine the percentage of individuals aged 28 to 32 (the age group most likely to have completed a college degree and be employed) with a bachelor's degree who are currently employed during each Census year. Additionally, we examine gender and racial differences in the proportion of individual's employed in high status (doctors, lawyers, managers and engineers) or female-dominated (teachers, nurses) occupations that historically required a bachelor's degree.

Having a bachelor's degree increases the likelihood of employment for all groups in all decades (results not shown).² We focus attention in Figure 2 on comparisons by race and gender in the proportion of 28-32 year olds with a bachelor's degree who were employed. The fact that black men with BA degrees had lower employment rates than white men with BAs in all decades suggests that even highly educated black males faced barriers to employment commensurate with their level of education. As Rury (2009:122) explains, "even in the North, African Americans encountered great trouble in gaining employment commensurate with their credentials. Racism permeated the job market and served to dramatically counteract the benefits of schooling for African Americans."

FIGURE 2 HERE

The small but prolonged female advantage in college completion for blacks prior to 1980 may be related to the high labor force participation rates of black educated women in the highly segregated American labor market. Black college-educated women were far more likely to be

employed than white college-educated women until the 1980s. In 1930, black women were three times more likely to work than white women. By 1970 black women worked 1.3 times more than white women (Goldin 1990). In fact, Figure 2 indicates that employment rates remained higher for college-educated black than white women throughout the last sixty years of the 20th century. Historically, black women worked more because black families had lower incomes, due in part to black men's higher unemployment rates and lower education levels than white men. However, family and individual characteristics are not the only reason for black women's high labor force participation. Goldin (1977) found that black women worked more than white women even if they had the same education level, family income, and number of children. Because black men arguably faced greater discrimination than black women in the labor market, many black families appear to have substituted black women's work for men's. Another potential legacy of slavery was that paid work was less socially stigmatized for black women than white women throughout the twentieth century (Goldin 1977). As a consequence of these conditions, the gender gap in employment among college-educated blacks was much smaller than that for whites throughout the latter half of the 20th century. Historical differences in labor force participation rates of black and white women arguably contributed to the higher rate of college completion of black women relative to black men.

While large racial differences in the proportion completing college have persisted throughout the period under study, the gender trend pattern for blacks and whites became similar because of changes in the impact of gender as well as race on labor market opportunities. In the 1980s, a large female favorable gender gap emerged for both racial groups (see Figure 1). Also striking is the similar pattern of stagnation in the proportion of male BA holders in the 1980s for blacks and whites. Between 1980 and 1990, black women's BA receipt rose more slowly than

did white women's but their rapid gains between 1990 and 2000 meant that by 2000 the gender gap in college completion among blacks (.48) was approaching that for whites (.63).

In order to understand further the changing incentives for higher education, we examine differences in the types of occupations held by race and gender groups. Table 1 presents the percentage of employed 28 to 32 year-olds with a bachelor's degree in various occupations by gender and race for five main occupational groups: doctors, dentists and lawyers; engineers; managers and other proprietors; teachers; nurses. These five occupational categories represent some of the most prestigious and high-paying occupations that require at least a bachelor's degree and traditionally female-dominated occupations that required a college degree. All other occupations are grouped into a sixth category.³

TABLE 1 HERE

The majority of college-educated black and white women worked as teachers from the 1940 through the 1970s. Nursing, the second most common occupation for college educated women in those years, was far less common than was teaching. From around the 1970s on, women moved into other occupations, including managerial positions and, in smaller numbers, doctors, dentists, lawyers, and engineers. It is no surprise that white men were the most likely to occupy the most prestigious jobs over time in both the professions and the corporate world. For black men, however, the story is quite different. College-educated black men were largely shut out of high-status occupations. In 1940 and 1950, there were almost no college-educated black male engineers, and less than 6% of black males with a degree worked as doctors, dentists, and lawyers or managers – compared to at least 7 to 15% of white men working in each of these fields. Instead, black men were much more likely to be working as teachers than in any other occupation. Women's access to employment and jobs as teachers was a likely incentive for them

to complete a college degree, while for black men the incentives were not the same. Because black men could not gain access to the same types of high-paying jobs that white men with college degrees held, their incentives to complete a college degree were lower.

Educational Transitions and Delay in College Completion

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 necessary transitions (Goldrick-Rab 2006; Pallas 2003; Mare 1981). In the U.S., 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 earned a high school diploma or completed a GED. High school graduates who decide to enroll in college must navigate several more steps (e.g., applying to college, being admitted into college, and matriculating) 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.

Evidence indicates that the current female advantage in college completion in the United States is due to female advantages at various transition points. At each transition point, moreover, there are important differences between racial groups, with larger female-favorable gaps among blacks than whites. For example, females have lower high school “status dropout” rates than males, and the gap has been widening since the mid-1990s.⁴ In 2005, almost 11

percent of males age 16-24 were dropouts, compared to 8 percent of females (Snyder et al. 2008). The male disadvantage holds for blacks and whites. In 2005, male dropout rates for whites and blacks were 6 and 12 percent respectively, compared to female dropout rates of 5 percent for whites and 9 percent for blacks (Snyder et al. 2008). Furthermore, male high school graduates (both black and white) are more likely to have completed this transition with a GED, and these youth are known to have lower future educational and labor market prospects than are high school diploma recipients (Cameron and Heckman 1993; Mishel and Roy 2006). Today females are also more likely to enroll in four-year colleges than males. Together the female advantage in high school completion and the female advantage in college enrollment explain, in part, the higher college completion rates of females relative to males.

In recent years males have been more likely than females to delay enrollment in college. Prior research finds that students who enroll in college directly after high school have higher rates of college enrollment, persistence in college, and college completion (Bozick & DeLuca 2005, Horn et al. 1995). Students who delay college often complete major life transitions, such as finishing school, getting married, becoming a parent, and working full-time out of the normative age-sequence (Hogan 1981; Rindfuss 1991). Experiencing non-normative patterns of major life transitions can make it more difficult to complete schooling, since individuals may have to juggle competing roles of spouse, parent, worker and student (Jacobs and King 2002; Pitts 1992). Of those who enrolled in college in the year 2000, 60% of men compared to 66% of women enrolled immediately after high school (Freeman 2004). This gender gap in timing of college enrollment is likely due to male delay in high school completion which has several sources including the growing tendency for boys to begin elementary school at older ages (Graue and DiPerna 2000; Malone et al. 2006), boys' higher rates of grade retention in elementary

school (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, relative to girls (Snyder et al. 2008).

Once enrolled in college, women attain a degree more quickly than men. For example, of all students who entered college in the fall of 1995, 66% of women and 59% of men had completed a bachelor's degree by 2001. 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. Gender gaps in time to degree also vary by race. While 71% of white women and 50% of black women had completed a bachelor's degree in this period, only 62% of white men and 37% of black men had done so (Freeman 2004).

In order to gain insights into when and how men fall behind women in the educational pathways to college completion and how the process has changed over time, we examine historical trends in gender differences in age-delay in college completion and in the educational transitions that lead to a college degree. We conduct two analyses. First, we analyze age-specific delay in college completion by birth cohort. Second, we analyze gender differences in two key educational transitions: enrolling in college and completing college, conditional on college enrollment.

Age-Specific Delay in College Completion

With 1940-2000 IPUMS data we examine when individuals complete college and whether they delay earning a bachelor's degree. We estimate age effects that control for cohort by linearly interpolating rates of college completion at each age from 22 to 28 for all birth cohorts.⁵ 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 28.⁶ 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 sample size.

Figures 3 and 4 report the female to male odds ratios of completing college using simulated cohorts as described above for whites and blacks. The white bars on the right side of each figure show equal odds as a reference point. Each bar in the graph provides a snapshot of the gender gap in college completion at each age for each birth cohort. Following the horizontal axis, from age 22 to 28, we can observe delay in college completion within each birth cohort. For example, following the most recent birth cohort (1974) of whites (see Figure 3), we can see that women were much more likely to complete college at age 22 than men (odds ratio=1.56), but this advantage decreased over time (to an odds ratio of 1.25 by age 28). This suggests that men delayed finishing college to later ages so that by age 28 they had closed some of the gender gap in college completion.

In Figure 3 we see that 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 (.48) 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.⁷ Women of the 1948 cohort differ from those in the 1938 cohort in that they do not fall as far behind men by age 28, 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 earlier 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 41% greater odds of completing a BA at age 22 to 12% greater odds of completing a BA by age 28. For the most recent cohort in the table (captured by the 1974 cohort), the white female advantage is very large: they have 56% greater odds of gaining a BA by age 22, and their advantage (25% greater odds) remains large at age 28.

FIGURES 3 AND 4 ABOUT HERE

Figure 4 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 (154,998 vs. 1,048,448 for whites) and because their rates of college completion are so much lower: in 2000, approximately 12% of blacks completed college compared to 25% of whites. Nonetheless, it is 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 reached parity by age 28 according to the point estimates for the 1938 and 1948 birth cohorts (.95 and .95), but they then fell further behind black women in the three most recent birth cohorts.

In order to obtain a clearer, more stable comparison of the educational experiences of whites and blacks, Table 2 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). Year is divided by 10 to represent changes in decades. Columns A and B report separate analyses for blacks and whites, in which we included main effects and all two-way interactions between age, year, and gender. In column C, we combined the samples and again specified all two-way interactions between age, year, gender, and race. Column D 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 2 ABOUT HERE

The coefficients in columns A and B parallel the trends visible in Figures 3 and 4; rates of college completion rose with age and rose over 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 (1.355) than whites (.822), and the female trend term (female*year) is much stronger for whites (1.157) than for blacks (1.033). The models also show that educational delay was larger for black males than

for white males (main effect of age; 1.128 for blacks and 1.115 for whites) and also for black females ($1.128 \times 0.961 = 1.084$) than for white females ($1.115 \times 0.939 = 1.047$).

Columns C and D allow direct assessments of trend differences between whites and blacks by combining blacks and whites into a single sample. Column C 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 (1.409) and highly statistically significant. Column C also shows that blacks were gaining educationally across this entire period relative to whites (the coefficient for black*year is 1.032, $p < .001$). Column D then adds three-way interaction effects. The relatively high white educational delay diminishes somewhat over time (the coefficient for black*age*year is .992, $p < .05$) as does the overall level of male delay (the coefficient for female*age*year is 1.009, $p < .001$). The last coefficient (female*black*year=.892, $p < .001$) confirms the clear pattern seen in Figures 3 and 4 to the effect 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, over time whites 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.

Educational Transitions

Results of the analysis of age-delay in college completion suggest that men delay college completion compared to women. To determine when in the educational process this delay occurs we analyze gender and race differences in key educational transitions. Using the 1940-2000 IPUMS data, we compute the probabilities of enrolling in post-secondary education and

completing college, given that an individual enrolled in 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, we can compute the proportion of a group that has completed a specific number of years of education conditional on having completed a 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.

Figure 5 presents the decompositions in terms of two transitions by gender and race: first, the unconditional probability of obtaining some college (e.g., college enrollment), and second, the probability of obtaining a bachelor's degree, conditional on college enrollment. The figure shows fitted proportions completing each of the transitions by birth cohort from a second-degree fractional polynomial regression of data from the 1940 through 2000 censuses. Actual data points for each cohort are also shown years are also shown in Figure 5. We analyzed trends in educational transitions for both younger (aged 22-24) and older (aged 26-28) respondents and results look very similar. To conserve space we only present the older age group (plots for younger age group available upon request from authors).

Figure 5 demonstrates that the rising gender gap among blacks is largely attributable to the different unconditional rates of enrolling in college. The top left panel of the figure shows that the rates of college enrollment rose for both genders over this period, but the rise was faster for women than men. This rise in college enrollment involved both increased rates of enrollment in community colleges (Snyder et al. 2006) and a more academically diverse population opting to enroll in higher education.⁸ Both of these processes probably contributed to the declining

odds of completing college, given college entry, for black men and women evident in the bottom left panel of Figure 5. The fitted decline in the odds of completing a bachelor's degree, given college entry, was somewhat steeper for black men than for black women, but the main female advantage stemmed from women's more rapid rise in college enrollment, given high school completion.⁹

FIGURE 5 ABOUT HERE

The right column of Figure 5 portrays the corresponding graphs for whites. The top panel shows that, like blacks, whites experienced rising unconditional rates of college entry. The white male rate of completing a bachelor's degree, conditional on college enrollment, was constant or declining over the past thirty years. This pattern is similar to that for blacks, and is probably due to the same reasons: 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 largely due to rising unconditional rates of college entry. However, the gender gap in completing college, 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 among whites in trends in college-entry, the gender gap for whites in trends in college completion contributes to the strong female-favorable trend in the unconditional probability of completing a bachelor's degree by age 26-28 for whites.

Since the census data do not distinguish whether individuals earned a high school diploma or received a GED, educational transitions, such as high school graduation or college enrollment condition on high school graduation cannot be examined with much precision. This is problematic for three reasons. First the proportions of successive cohorts completing high school

with a GED have changed over time. Second the proportion going the GED route varies by gender. Third, diplomas and GEDs imply different future prospects at least partly because of non-random selection into the GED route (Cameron and Heckman 1993; Heckman and LaFontaine 2007). With these caveats noted, we present the trends in high school completion (whether by diploma or by GED) and the probability of completing at least some college, given high school completion (either by diploma or by GED) in Appendix Figure 1. For both blacks and whites, high school completion rates have risen substantially from 1940 to 2000 but these trends moved in parallel for males and females. Similar to the trends in the unconditional probability of completing at least some college, the trends in the conditional probability of completing some college given high school completion rose for both blacks and whites over time, but at higher rate for black or white women than for black or white men. In sum, for both blacks and whites, the female advantage in college completion is largely due to women's greater likelihood of enrolling in college, in addition to their small advantage over men in completing college once enrolled.

The comparisons discussed above focus on gender differences within racial groups, but it is also illuminating to focus on racial differences for males and females. Appendix Figures 2 and 3 re-express the information presented above in figures 3 and 4 as racial comparisons that control for gender (the census years are reordered relative to Figures 3 and 4 and the odds-ratio reference bars are set to 2.0 for greater clarity). These figures show that progress in closing the black/white gap in college completion appears to be greater for black males than for black females, but in light of the trends portrayed in Figure 1 this is likely due to the lack of gains white males have made over time. 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, 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.

Incarceration and the Racial Gender Gap

Both research and conventional wisdom often assume that more young black men are currently in jail or prison than enrolled in college. A 2002 report produced by the *Justice Policy Institute* stated that 678,300 black men were incarcerated in 1994, while only 549,600 were enrolled in college (Schiraldi and Ziedenberg 2002). However, this figure is misleading as it included the total population of incarcerated blacks, not college-aged males. More recent figures show that in 2005, 193,000 black males aged 18-24 (slightly more than 10 percent of the total population of this age group) were incarcerated in federal and state prisons and local jails (Harrison and Beck 2006). 530,000 18-24 year old black males (28 percent of the total population of black males of this age group) were enrolled in colleges and universities that same year. Even though more young black men are in college than prison, the risk of incarceration for black men is much higher than any other group. Black men are about 7 times more likely to have a prison record than white men, and in 1965-1969 birth cohorts black men are more likely to have a prison record (22%) than a bachelor's degree (almost 13%) (Pettit and Western 2004). These findings coupled with the fact that incarceration rates have risen substantially in recent decades beg the question: Is the black gender gap due, in part, to black men's high rates of incarceration?

Between 1925 and 1975, incarceration rates in the United States held stable 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). Black men are overrepresented in prisons and jails in the U.S., comprising 46% of the State and 38% of the Federal prison populations. Black men also have a much higher risk of imprisonment over their lifetime (29%) than white men (4%) (Pettit and Western 2004). The numbers are even more striking among black men without a college education. Of the 1965 to 1969 birth cohort, almost 32% of non-college educated African American men experienced incarceration by the ages of 30 to 34, and a staggering 52% of black high-school drop-outs had a prison record (compared to 6% and 13% of white men, respectively) (Pettit and Western 2004; Western et al. 2002). It should not be surprising, then, that incarcerated men have much lower levels of education than the general population. Only 2% and 8% of the State and Federal prison populations, respectively, hold a college degree, compared to 22% of the general population (Harlow 2003). Black men are more likely to be incarcerated than white men, and incarcerated men are less likely to have a bachelor's degree – but what does this mean for the black gender gap in college completion?

If incarcerated black males were otherwise similar to non-incarcerated black males, an extreme estimate of the potential impact of incarceration would come from comparing the college completion rate of the non-institutionalized population with that of the total population. The Current Population Surveys provide estimates of the non-institutionalized population. Meanwhile, estimates of the number of inmates in state prisons and federal correctional facilities by race, gender, education, and age can be obtained from the Surveys of Inmates in State and Federal Correctional Facilities. Using these survey data for the years 1974, 1979, 1986, 1991,

1997, and 2004, 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. Therefore, we 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, 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 6 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.¹⁰

FIGURE 6 HERE

This accounting exercise, however, almost certainly overstates the causal effect of incarceration on the college completion rates of black males, even when recognizing that the prison and jail data account only for the cross-sectional incarcerated population and therefore understate the number of black males who were *ever* in jail or prison. The reason is simple: the

typical youth who has experienced incarceration would have been much less likely to complete college than the average youth, because the risk factors for incarceration imply a low probability of college completion even in the absence of incarceration. Researchers have long known that youth who experience arrest are drawn disproportionately from the bottom of the educational achievement distribution (Sampson and Laub 1993; Arum and Beattie 1999). More recent research confirms this and shows that youth at high risk for incarceration also have poor non-cognitive skills and are more likely to engage in risky behaviors that themselves correlate negatively with educational attainment (Hjalmarsson 2008; Heckman et al. 2006).

A more plausible calculation considers the strong connection between incarceration and academic performance along with the very strong connection between academic performance and college completion (Rosenbaum 2001; Buchman and DiPrete 2006). We used data from National Education Longitudinal Study of 1988 (NELS88), a nationally representative survey of 8th graders in 1988 who were followed to the age of 25 or 26 in 1992. We compute the proportion of sample members who had graduated from college by age 25 or 26 as a function of their (race-specific) quartile of academic performance in the eighth grade. Because incarcerated youth are heavily drawn from the bottom of the academic performance distribution, we corrected the empirically observed proportion of black males who had graduated from college by aged 25-26 by substituting the observed female graduation rate in the bottom quartile for the observed male rate (recall that Pettit and Western estimated a lifetime incarceration risk of 0.29 for black males). The rationale for using the female rate is simple: black females are rarely incarcerated, and so the use of their graduation rate for males in these quartiles will likely over-correct for any negative effect of incarceration on college completion, and thus provide an upper bound for the impact of incarceration on educational outcomes. Our adjustment increased the estimated black

male college graduation rate in the NELS88 data from 0.14 to 0.15. As a more extreme adjustment, we then assigned the observed black female college graduation rate to black males in the bottom half of the eighth grade academic performance distribution, and this increased the estimated black male college graduation rate from 0.14 to 0.16.¹¹ Of course, an adjustment of even a single percentage point would be substantively important, but neither the plausible adjustment of one percentage point nor the extreme adjustment of two percentage points is large enough to close the gap between the black male and female college graduation rates (see Appendix A). Clearly, the causal effect of incarceration on black male graduation rates is smaller than the accounting adjustment shown in Figure 6.

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 3 and 4. 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. 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 data, and clearly requires further research.

Current Trends

Finally, in order to examine the most recent trends in the black and white gender gap in college completion, we supplement the findings from the last three available decades of IPUMS

data with the most recent data available from the American Community Survey for the years 2005-2007. The ACS is a nationally-representative survey of both the non-institutionalized and the institutionalized population, collected annually. To provide a more robust estimate of recent trends, we use pooled data from 2005-2007. Figure 7 reproduces the findings for the years 1980 to 2000 from Table 1 in addition to the findings for 2005-2007.

FIGURE 7 HERE

From 2000 to 2005-2007, black and white women's advantage over men continued to grow, but at a slower rate than the previous decade. In 2005-2007, 33% white women aged 22-28 had completed a bachelor's degree, compared to 24% of white men. The corresponding numbers for blacks are 17% for women compared to nearly 12% for men. Each group except white men increased their rate of college completion from 2000 to the current period (although black men experienced slower growth than black or white women). White men experienced no growth during this time period. More refined plots that focus on narrower age ranges (namely 22-24 and 26-28) show the same pattern (figures available upon request from the authors).

We extended our analysis to include individuals aged 29-31 to see if men close some of the gender gap in college completion if given a few more years to complete their degree. Comparing 26-28 year olds to 29-31 year-olds in 2005-2007, we find that the black gender gap does not close among older ages (the difference between men and women is 4 percentage points in the younger age group and 5 percentage points in the older age group). However, white men are able to close some of the gender gap -- from 8 percentage points in the younger age group to 5 percentage points in the older age group). This is partially due to the age when the proportion of each group completing college peaks. For black and white women and black men, college completion peaks at age 30. For white men, completion peaks at age 31. Extending the analysis

to older ages does not substantially change the overall trends in college completion. If these trends continue at similar rates in the future, it appears that the female-favorable gender gap in college completion will continue to grow for blacks and whites, but the gap will remain larger for whites than blacks in arithmetic terms, and the odds ratio advantage for white women will overtake the odds ratio advantage for black women (calculations available from the authors upon request).

Discussion

Much has been written about women's advantage over men in educational attainment, but little is known about how and why these trends evolved differently over time by race. Using census data from 1940 to the present, we show that black women have long held an advantage over black men in college completion, which differs sharply from the changing gap in college completion among white men and women. The difference in the black and white gender gap in college completion is arguably due to the exclusion of educated black men from many of the high-status male-dominated occupations that were available to white men and black men's differential access to educational resources, (notably the GI Bill) coupled with greater incentives for black women to work compared to white women.

While white women's advantage in college completion is a more recent trend, their advantage over white men is growing at more rapid rate than black women's advantage over black men. Much of men's disadvantage in college completion is located at the transition to post-secondary education, though white males are also disadvantaged in the trend in college completion, given post-secondary enrollment. Finally, it appears that the rising rates of incarceration may have contributed only modestly to the gender gap in college completion for blacks. In light of the sharp increase in incarceration rates for black males, it is remarkable that

the female favorable gender gap in college completion among blacks has been relatively small in comparison to the tremendous relative gains made by white females. This fact, however, arises mostly from the tremendous educational advance of white women against relatively stagnant gains for white males.

The perception that there is a crisis in black men's education in the United States is not unwarranted. Clearly 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 in terms of odds ratios for completing college. Moreover, 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 the educational level of white women will require additional gains for black men 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 despite the handicap of very high incarceration rates during the past 30 years. Black males made dramatic gains in educational attainment in every decade covered by this analysis, even in decades when the incarceration rate of young black males was rising sharply. In contrast, the educational attainment of white males has been surprisingly stagnant 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). 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.

Our findings underscore the historical importance of considering age in any comparison of educational attainment rates. They 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.

¹ At the end of 2005, 193,000 black males aged 18-24 (slightly more than 10 percent of the total population of this age group) were incarcerated in federal and state prisons and local jails (Bureau of Justice 2005). 530,000 18-24 year old black males (28 percent of the total population of black males of this age group) were enrolled in colleges and universities that same year.

² Between 1940 and 2000, the proportion of white men without a bachelor's degree who were working varied between .85 and .89, compared to .89 and .95 for those with a bachelor's degree (results available from authors upon request; data source: IPUMS 1940-2000). For black men without a bachelor's degree, the proportion employed has steadily declined over time from .84 in 1940 to .62 in 2000. Employment rates for black men with a bachelor's degree have remained steady between .86 and .93. For both black and white women, employment rates have increased over time, but women with a college degree were more likely to be employed at all time points. In 1940, 50% and 60% of college-educated white and black women were employed, respectively, compared to 28% and 43% of non-college-educated white and black women. By 2000, 83% and 84% of college-educated white and black women were working, compared to 68% and 64% of white and black women without bachelor's degrees.

³ Doctors, dentists, and lawyers include all types of doctors, as well as veterinarians, and judges. Teachers do not include college instructors or professors. Nurses include professional and practical nurses.

⁴ The 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.

⁵ Ideally, we would use longitudinal data to track successive cohorts across different ages, but such information is not available in IPUMS, 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.

⁶ We simulate using the 1974 instead of the 1978 birth cohort in order to avoid excess extrapolation.

⁷ Men 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.

⁸ Buchmann 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.

⁹ 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.

¹⁰ 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.

¹¹ As with any panel, there is some sample attrition in NELS88 between the first and fourth wave, and it is possible that lost cases are disproportionately males with prison records. Arguing against this is the fact that the attrition pattern by 8th grade quartile is relatively flat for black males (11%, 9%, 10% and 9%). At the same time, it is also the case that sample attrition is greater for black males than for black females, and some of this may be related to incarceration. To take into account the possibility that the panel weights are not fully correcting for attrition due to incarceration, we adjusted the reported proportion of males in each academic quartile by the difference in attrition rates for black males and black females, and assumed that none of the added black males completed college. Adjusting the bottom quartile in this way increases the adjustment for incarceration from 0.9 percentage points to 1.1 percentage points. Adjusting both the first and the second quartiles in this way increases the adjustment for incarceration from 1.7 percentage points to 2.1 percentage points. These adjustments are not large enough to affect the rounded adjustment figures reported in the text, and do not affect our substantive conclusion.

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Table 1: Percentage of Employed 28-32 Year Olds with a BA Working in Various Occupations

	1940	1950	1960	1970	1980	1990	2000
Black Female							
Doctors, Dentists or Lawyers	0.0	0.0	0.8	0.6	2.0	3.1	3.3
Engineers	0.0	0.0	0.0	0.0	0.9	1.5	2.1
Managers & Other Proprietors	0.0	0.0	0.8	0.6	5.6	9.2	10.3
Teachers	56.9	65.1	61.2	64.5	35.1	15.7	14.8
Nurses	3.5	0.0	3.7	3.3	3.6	6.5	5.1
Other	39.7	34.9	33.5	31.1	52.9	64.0	64.4
White Female							
Doctors, Dentists or Lawyers	0.9	2.2	1.5	1.1	2.4	4.1	3.8
Engineers	0.2	0.0	0.4	0.3	0.7	2.0	2.0
Managers & Other Proprietors	1.5	1.8	2.1	2.1	6.6	11.3	11.4
Teachers	53.3	33.9	45.4	50.7	33.9	17.5	19.5
Nurses	2.7	12.1	5.3	3.9	5.6	7.5	5.3
Other	41.4	50.0	45.2	41.9	50.8	57.6	58.1
Black Male							
Doctors, Dentists or Lawyers	5.1	5.7	5.0	2.2	4.3	4.3	3.5
Engineers	0.0	0.0	2.5	4.3	4.7	4.8	4.8
Managers & Other Proprietors	2.6	5.7	2.5	5.2	8.9	12.2	13.8
Teachers	35.9	28.6	31.5	29.2	12.4	7.6	10.3
Nurses	0.0	0.0	0.5	0.3	0.6	0.5	1.7
Other	56.4	60.0	58.0	58.8	69.1	70.6	65.8
White Male							
Doctors, Dentists or Lawyers	15.7	10.4	8.4	6.9	7.9	6.8	5.4
Engineers	7.5	11.1	12.5	11.3	6.8	9.1	7.7
Managers & Other Proprietors	9.4	11.6	11.3	10.5	15.4	17.7	17.6
Teachers	11.4	7.2	11.1	12.9	9.7	5.7	7.3
Nurses	0.2	0.1	0.1	0.3	0.7	0.7	0.9
Other	55.9	59.7	56.7	58.2	59.5	60.0	61.2

Source: 1940-2000 IPUMS

Table 2: Logistic Regression for the Probability of Completing Four-Year College by Age, Year, Gender, and Race

	A: Blacks	B: Whites	C: Total	D: Total
age	1.128*** (.01)	1.115*** (.00)	1.115*** (.00)	1.119*** (.00)
year	1.350*** (.01)	1.225*** (.00)	1.228*** (.00)	1.227*** (.00)
age*year	1.011*** (.00)	1.018*** (.00)	1.017*** (.00)	1.014*** (.00)
female	1.355*** (.04)	.822*** (.01)	.827*** (.01)	.822*** (.01)
female*year	1.033** (.01)	1.157*** (.00)	1.149*** (.00)	1.155*** (.00)
female*age	0.961*** (.01)	0.939*** (.00)	0.941*** (.00)	0.931*** (.00)
black			0.283*** (.01)	0.259*** (.01)
black*female			1.409*** (.03)	1.654*** (.05)
black*age			1.015** (.01)	1.016 (.01)
black*year			1.032*** (.01)	1.103*** (.01)
black*age*year				.992* (.00)
female*age*year				1.009*** (.00)
female*black				1.019 (.01)
female*black*year				.892*** (.01)
N	154998	1048478	1203466	1203466

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

Source: 1940 - 2000 IPUMS

Figure 1: Proportion of 22-28 Year Olds Completing College, by Race and Gender

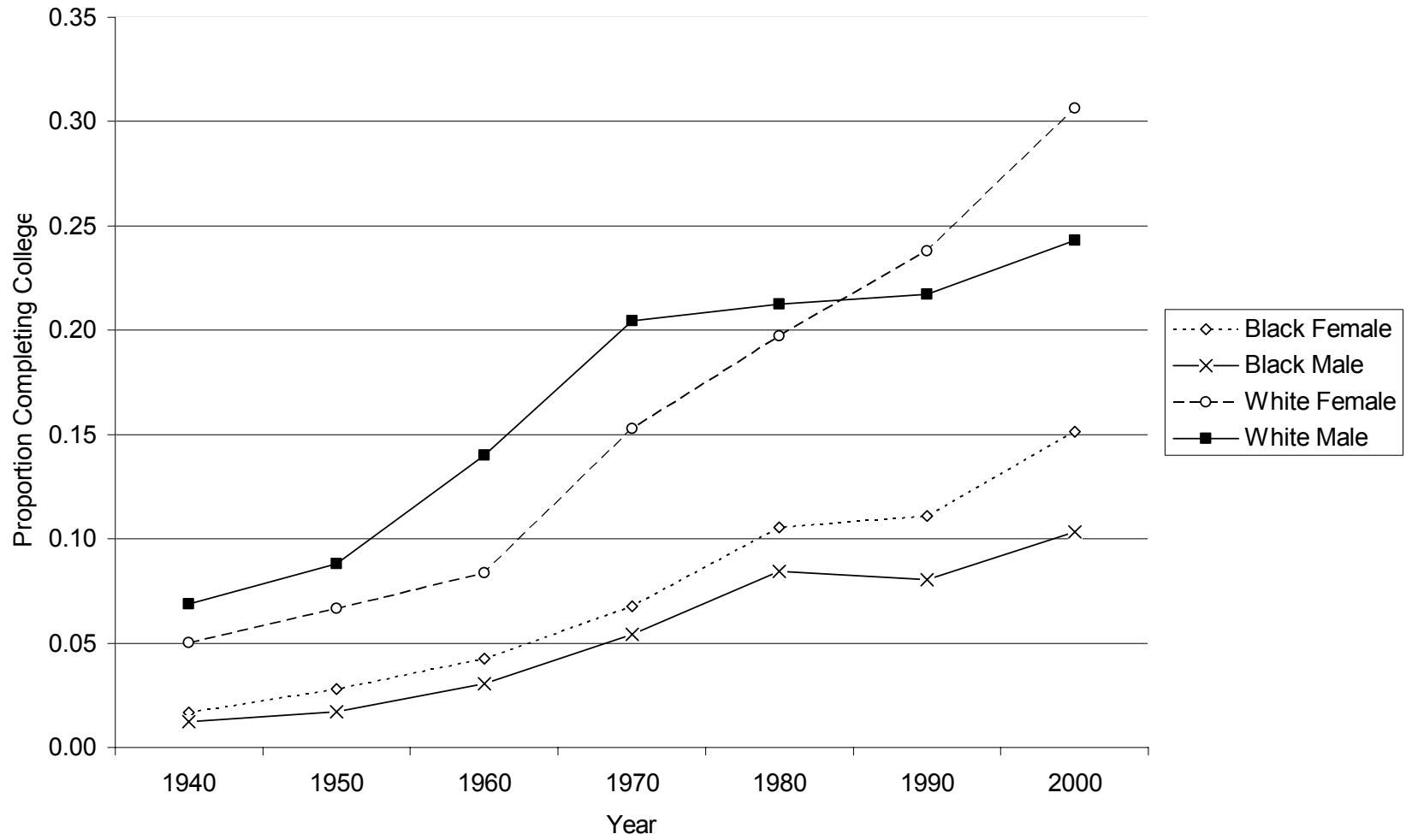


Figure 2: Proportion of 28-32 Year Olds with a Bachelor's Degree that are Employed, by Race and Gender

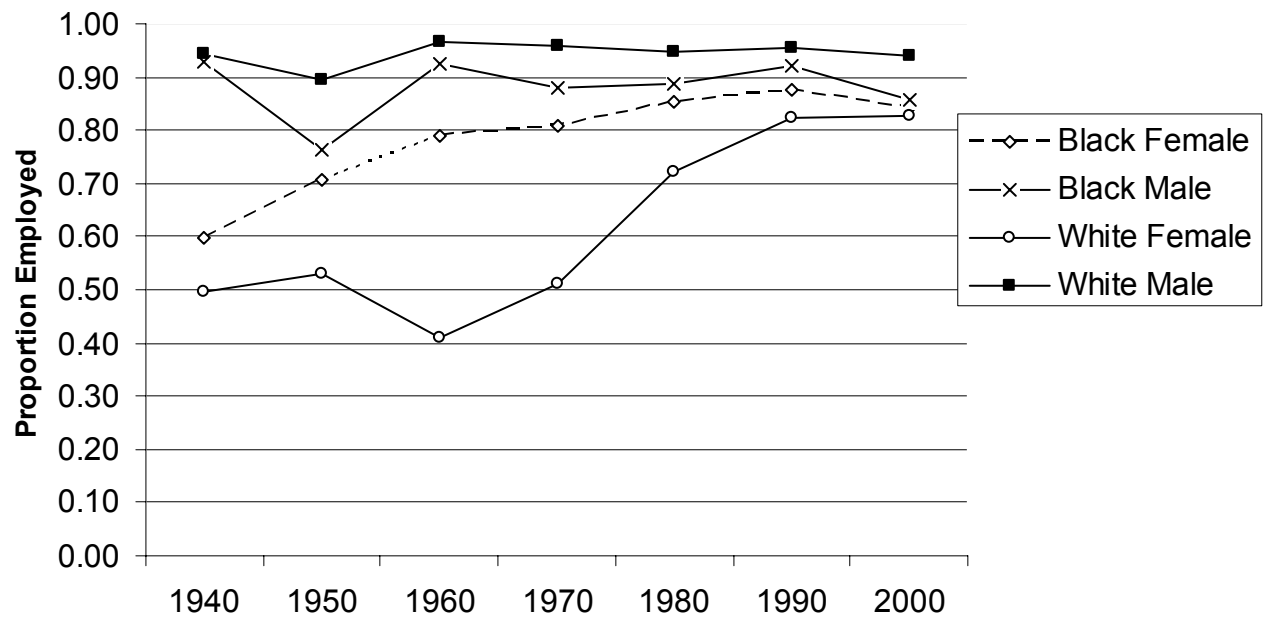
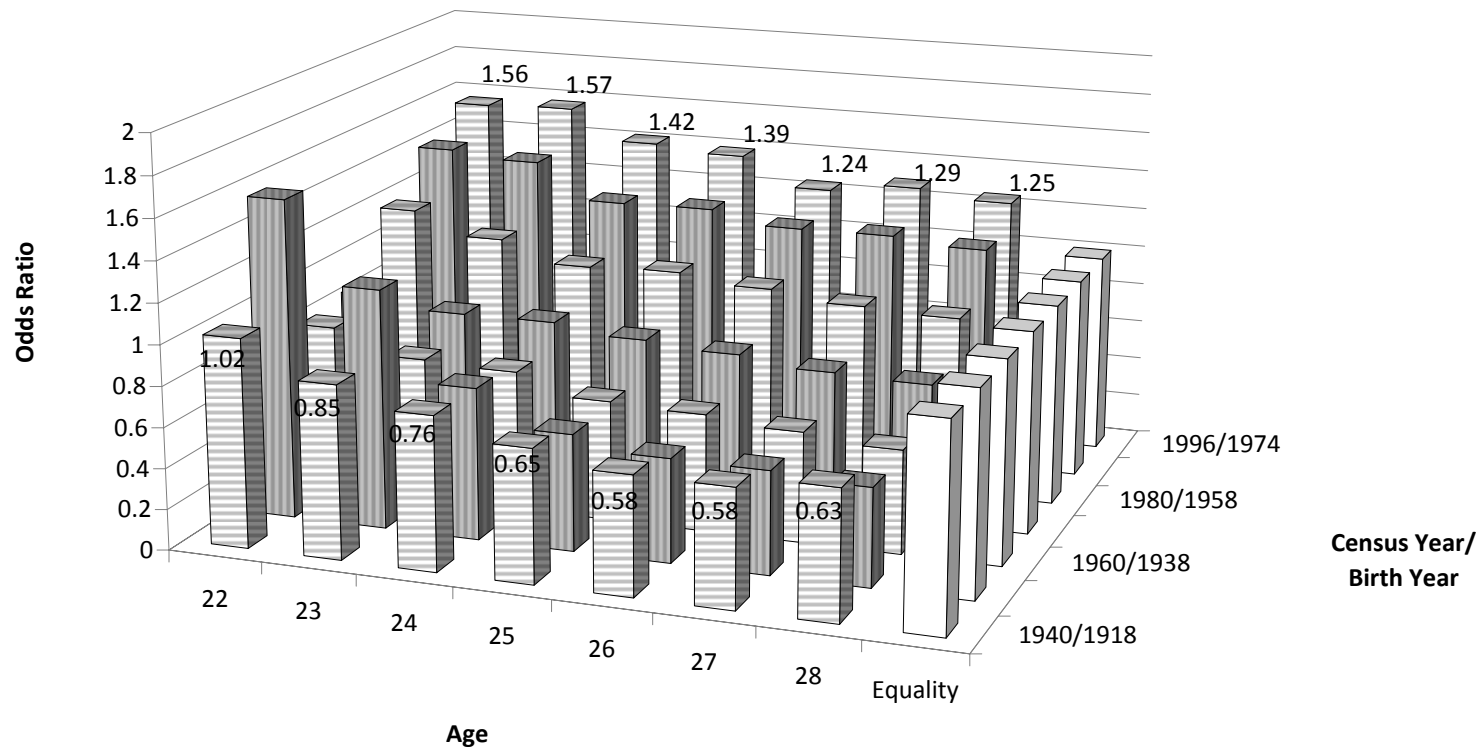
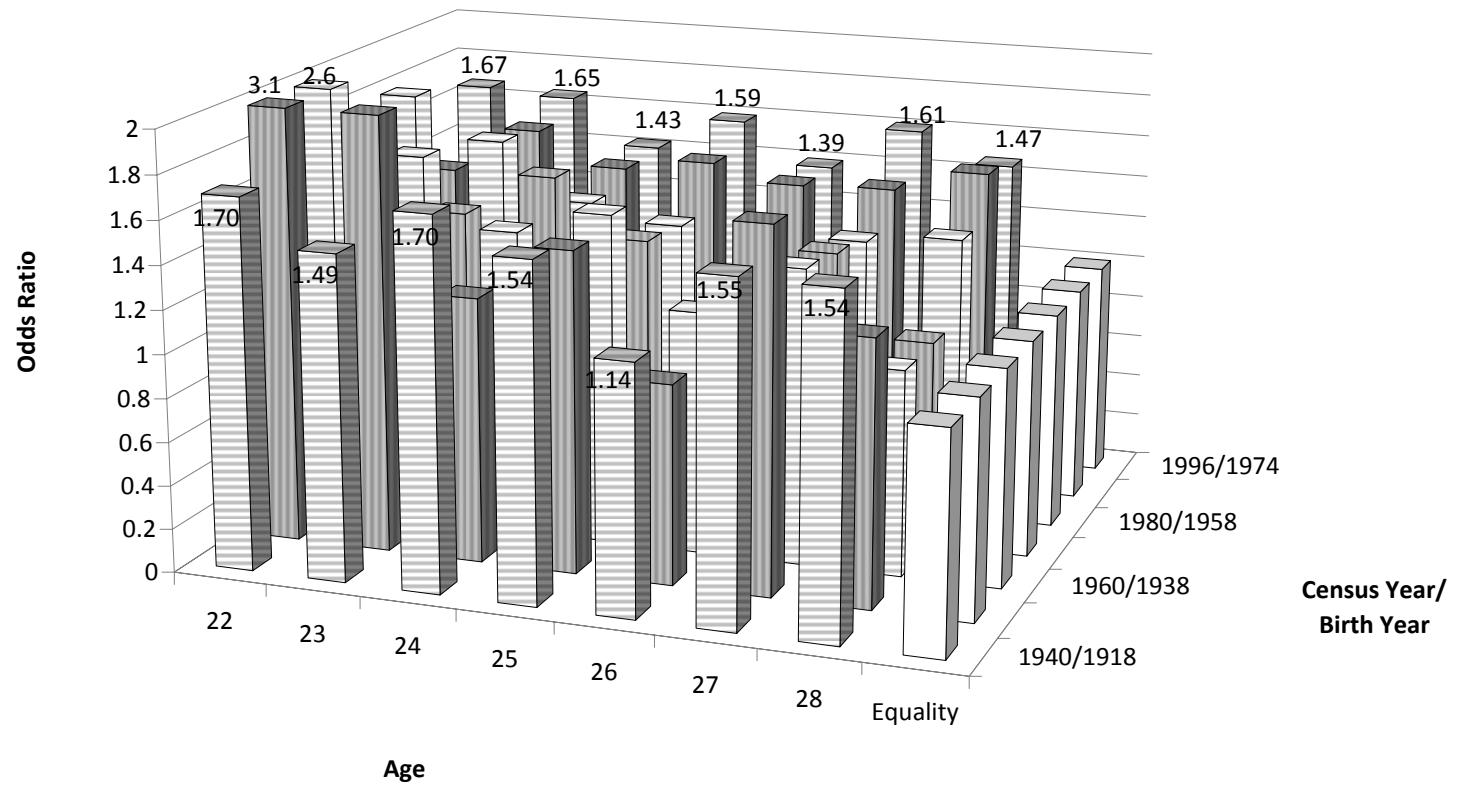


Figure 3: Changing Odds Ratios of Completing College, White Females to White Males



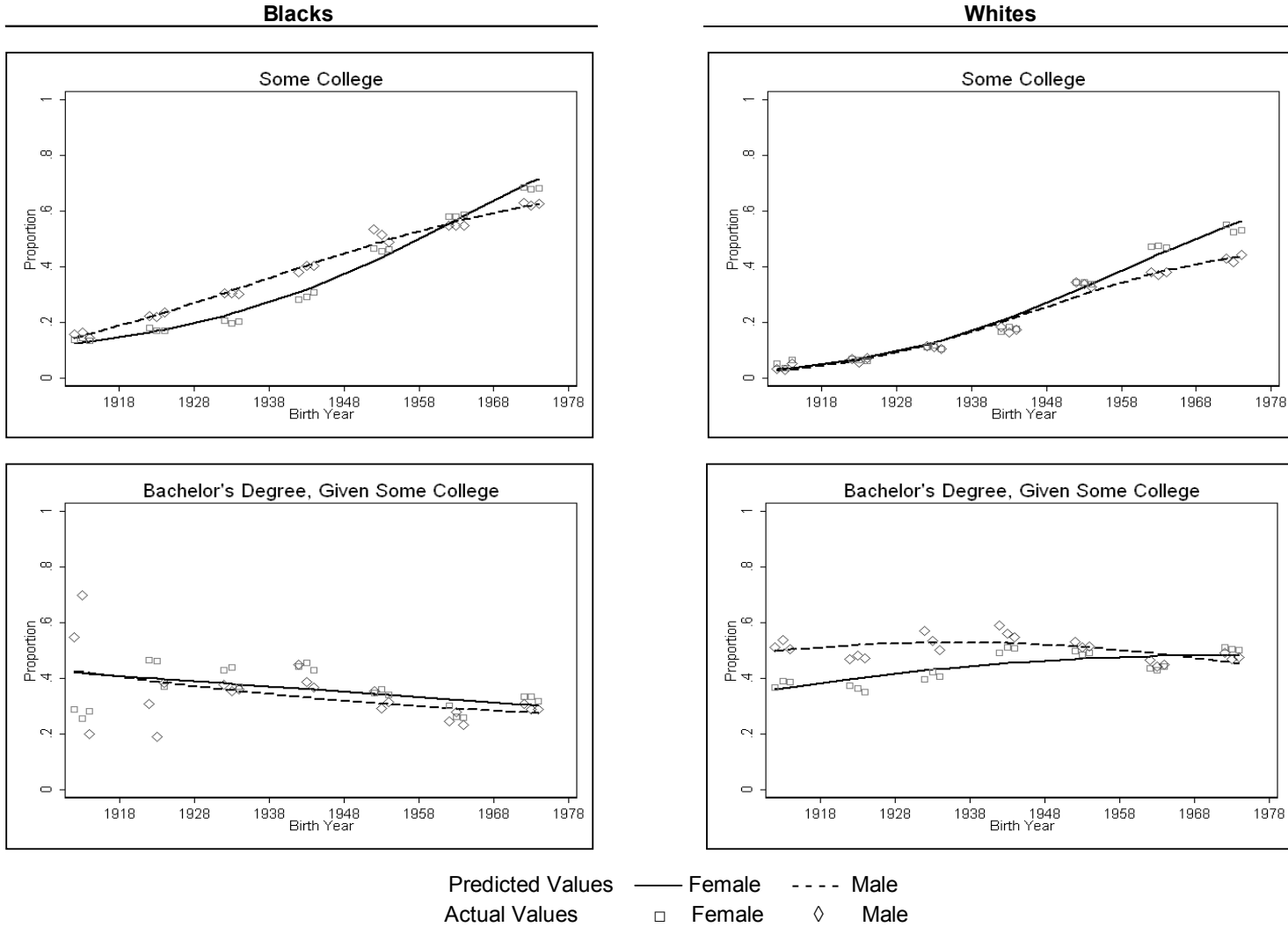
Source: 1940-2000 IPUMS, interpolated age-specific rates by cohort
(extrapolated for 1974 cohort)

Figure 4: 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 5: Proportion of 26-28 Year-Olds Completing Some College and College Given Some College by Race



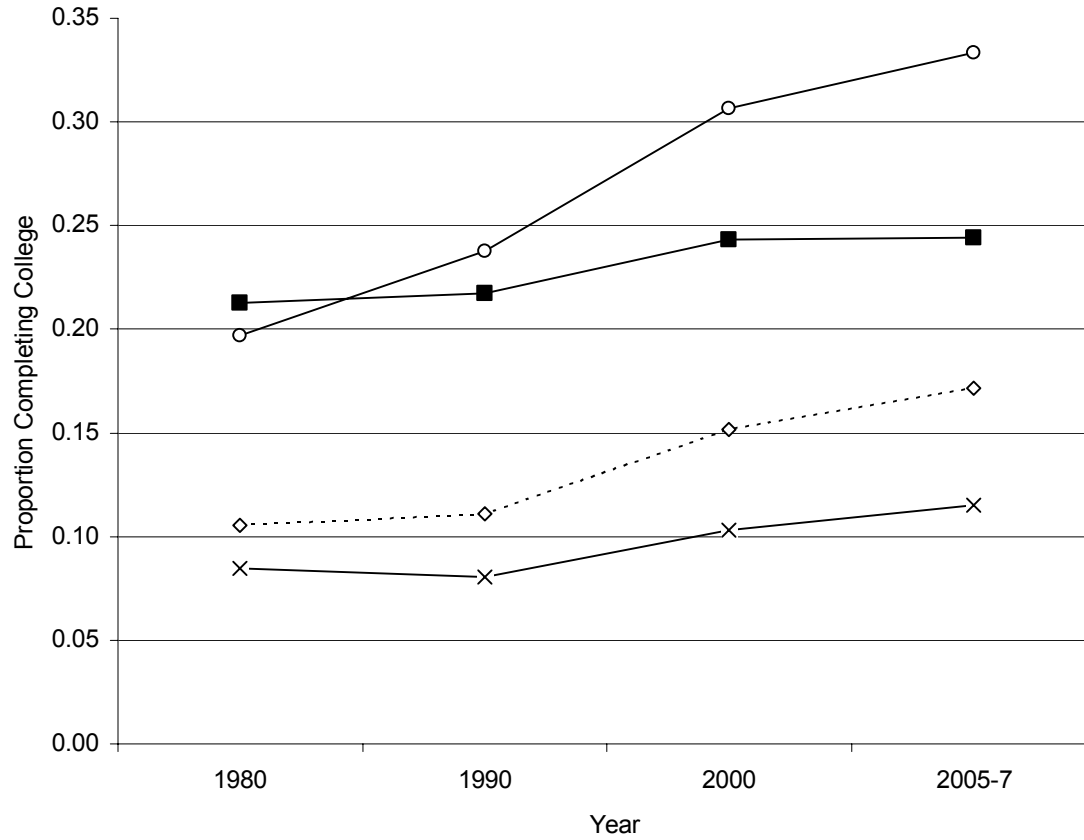
Source: 1940 - 2000 IPUMS

Figure 6: Odds Ratios of BA Completion for Blacks Age 25-28



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

Figure 7: Proportion of 22-28 Year Olds Completing College, by Race and Gender



---◇--- Black Female —x— Black Male —○— White Female —■— White Male

Source: 1980-2000 IPUMS, 2005-7 ACS

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

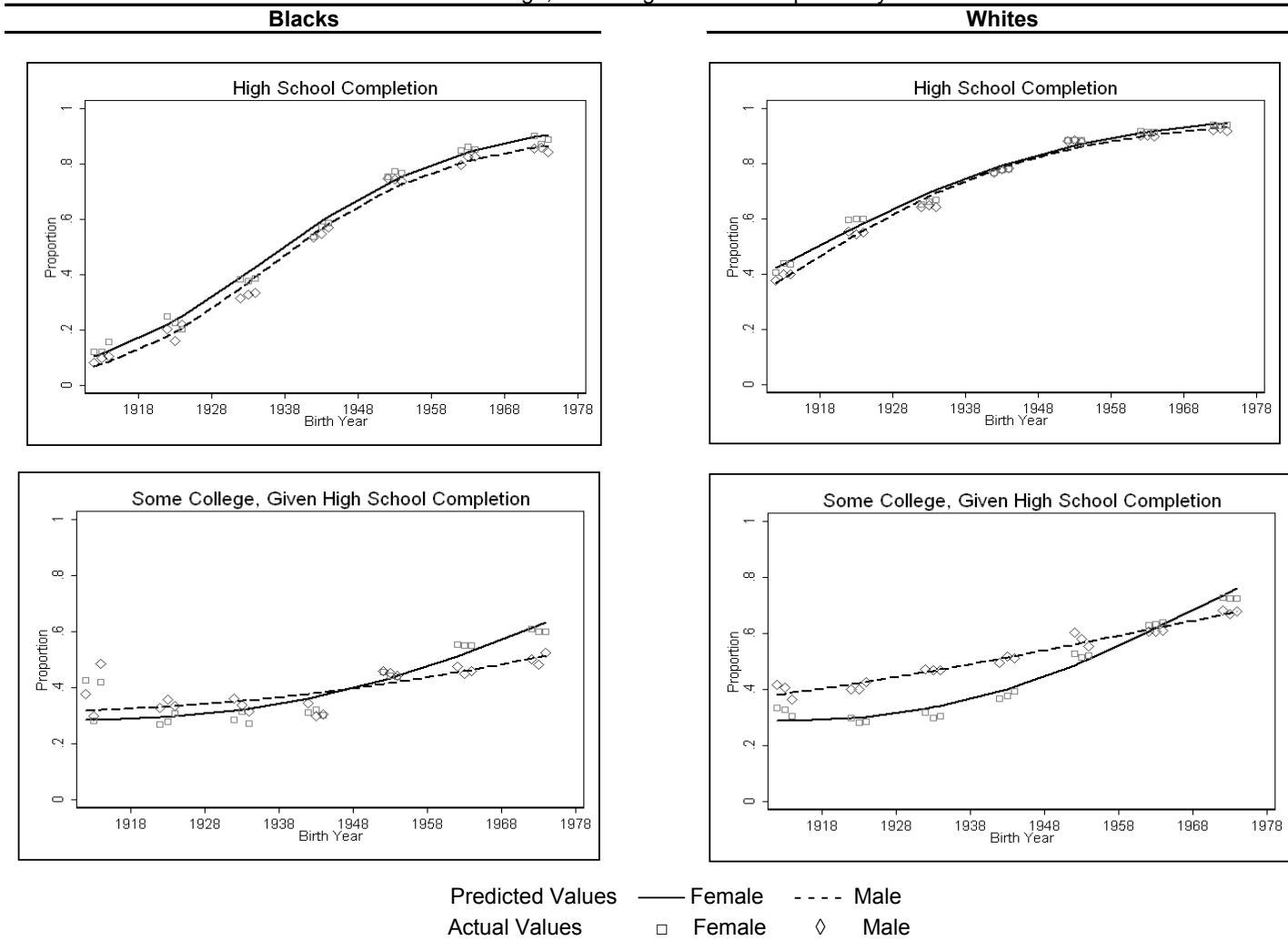
Age		1940		1950		1960		1970		1980		1990		2000	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
22	%	0.042	0.043	0.045	0.069	0.087	0.072	0.145	0.128	0.099	0.116	0.116	0.156	0.099	0.155
	N	10125	10339	2980	3166	9016	9106	13965	14823	16346	16649	12067	11850	10869	10751
23	%	0.061	0.050	0.065	0.082	0.127	0.091	0.204	0.168	0.174	0.181	0.187	0.238	0.191	0.283
	N	10036	10178	3014	3184	8797	8868	13954	14759	16205	15899	12573	12600	10621	10321
24	%	0.067	0.051	0.087	0.069	0.135	0.093	0.211	0.173	0.206	0.196	0.219	0.241	0.242	0.322
	N	10058	10208	3054	3216	8756	9098	10827	11375	16101	16184	12964	12854	10434	10378
25	%	0.074	0.052	0.096	0.060	0.145	0.082	0.213	0.159	0.224	0.213	0.232	0.253	0.271	0.345
	N	10091	10218	3135	3381	8975	9336	11126	11520	15965	15672	13932	14397	10727	10781
26	%	0.076	0.051	0.111	0.060	0.151	0.083	0.221	0.156	0.252	0.227	0.246	0.260	0.297	0.344
	N	9739	10155	3068	3389	8505	8842	11679	11829	15359	15590	14673	14910	10420	10599
27	%	0.085	0.053	0.105	0.062	0.163	0.084	0.227	0.150	0.263	0.221	0.244	0.249	0.291	0.342
	N	9612	9681	3070	3404	8933	9146	12184	12249	15309	15314	15140	15312	11171	11406
28	%	0.077	0.053	0.104	0.067	0.173	0.082	0.225	0.139	0.283	0.233	0.256	0.252	0.310	0.352
	N	9569	9819	3171	3475	8972	9361	10719	10970	14721	14951	14835	15164	12033	12206

Age		1940		1950		1960		1970		1980		1990		2000	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
22	%	0.012	0.020	0.008	0.026	0.010	0.026	0.032	0.040	0.037	0.065	0.044	0.058	0.044	0.081
	N	1136	1344	355	421	1186	1259	1613	1922	2492	2752	1877	2105	2310	2440
23	%	0.006	0.007	0.014	0.034	0.026	0.047	0.052	0.068	0.068	0.105	0.061	0.092	0.079	0.126
	N	1079	1296	347	407	1098	1219	1435	1813	2404	2707	1872	2158	2133	2327
24	%	0.014	0.026	0.023	0.027	0.031	0.040	0.045	0.073	0.077	0.100	0.081	0.110	0.111	0.152
	N	1092	1292	349	408	1106	1322	1379	1583	2357	2726	1876	2198	2082	2365
25	%	0.008	0.013	0.014	0.024	0.029	0.046	0.048	0.065	0.096	0.115	0.086	0.116	0.116	0.175
	N	1179	1340	347	449	1089	1288	1304	1641	2293	2612	2024	2319	2054	2309
26	%	0.013	0.021	0.028	0.023	0.038	0.039	0.064	0.076	0.102	0.115	0.089	0.121	0.127	0.169
	N	1022	1304	358	434	1057	1217	1308	1557	2216	2494	2007	2382	1944	2343
27	%	0.016	0.012	0.011	0.029	0.039	0.052	0.063	0.084	0.099	0.124	0.103	0.126	0.119	0.176
	N	1085	1171	371	409	1149	1337	1380	1558	2115	2488	1974	2356	2039	2457
28	%	0.010	0.016	0.021	0.031	0.043	0.047	0.083	0.074	0.122	0.120	0.093	0.143	0.132	0.184
	N	1080	1322	387	416	1009	1296	1217	1426	2011	2305	1953	2407	2201	2536

Source: IPUMS 1940-2000; ACS 2005-2007.

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: Proportion of 26-28 Year Olds Completing High School and Some College, Given High School Completion by Race



Source: IPUMS 1940-2000

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

