The Relative Earnings of Black College Graduates, 1980-2001

Catherine J. Weinberger
University of California Santa Barbara
Weinberg@econ.ucsb.edu
and
Lois Joy
Smith College
Ljoy@email.smith.edu

September, 2003 draft

In this chapter, we combine data from several different data sources to create a statistical picture of racial disparities in earnings among college graduates in their 20's and 30's during the period 1980-2001 in the U.S. We find that although the gender gap faced by white women fell by 30 percent, racial gaps in both hourly and annual earnings among full-time workers were virtually unchanged over this period. During both the 1980-1990 and 1991-2001 periods, black men in their 20's and 30's earned about 15 percent less than white men, while black women earned about 25 percent less than white men. After controlling for differences in family background, work experience and the type and quality of college education, black men earned 8 percent less and black women earned 15 percent less than white men. The observed gaps were smaller among those in their 20's than among those in their 30's, but the relationship between age and earnings differentials was remarkably stable over the two decades. We also find that racial wage differentials vary dramatically by college major. For example, electrical engineering majors have very small wage gaps between races when compared to other college graduates.

Discriminatory hiring practices were once widespread and legally sanctioned. The employment opportunities of college graduates were explicitly contingent on race and gender. A 1942 U.S. government report entitled "National Survey of the Higher Education of Negroes" explains matter-of-factly that:

> "Even in northern cities there are relatively few of the higher paid occupations in which Negroes are not limited to the service of their own people. A predominantly large proportion of college-trained Negroes go into teaching, and teaching opportunities for Negroes—with a few exceptions in the large cities of the North—are limited to the Negro schools of the South."[1]

Title VII of the Civil Rights Act of 1964 rendered such blatant discrimination illegal.   Immediately following this legislation, there was a dramatic change in labor market opportunities for black college graduates. In a 1976 study, Richard Freeman described "a collapse in labor market discrimination" against new black male college graduates in the late 1960s. Very few businesses sent campus recruiters to the 21 Southern black colleges he studied in 1960 (an average of only 4 per school), but the average number of recruitment visits per campus increased to 50 by 1965, and to 300 by 1970. Census data from 1970 showed that, probably as a result of these recruitment visits, black male college graduates between the ages of 22 and 24 earned as much as their white counterparts, up from earning only 70 percent as much a decade earlier (Freeman, 1976). While slightly older cohorts continued to face significant gaps (Freeman, 1976), young black male college graduates continued to earn as much as white male college graduates through the mid-1970s (Bound and Freeman 1992).[2]

Despite this dramatic change in opportunities, racial gaps among young college graduates returned during the 1980s (e.g. Meisenheimer, 1990; Bound and Freeman, 1992; Weinberger 1998; Bradbury, 2002). Bound and Freeman (1992) attribute the return of racial differentials among college graduates during the 1980s to relaxed enforcement of anti-discrimination and affirmative action policies. Of course, the absence of enforcement cannot fully explain the presence of racial wage gaps between equally well educated individuals unless accompanied by widespread discriminatory practices, or unless there are differences in on-the-job productivity that are unrelated to formal education.

Economic studies of racial differences in earnings often focus on underlying differences in the number of years of schooling or the quality of schooling (see e.g. Smith and Welch, 1989; Card and Krueger, 1992, 1996; Heckman, 1998). Another explanation for earnings gaps, especially gender gaps, is that there are differences between groups in the proportion of students choosing remunerative college majors such as engineering or computer science (Polachek, 1978; Daymont and Andrisani, 1984; Grogger and Eide, 1995; Brown and Corcoran, 1997; Weinberger, 1999, 2001). Nonetheless, most studies find racial and gender gaps in earnings among individuals with

---

[1] This fact was mentioned in the context of explaining that it was reasonable for so many Northern black students to choose to attend southern Negro colleges, so that they could begin building professional networks in preparation for teaching careers in segregated Southern schools—the racially prescribed professional career path (U.S. Office of Education, 1942/1943)

[2] Freeman (1976) notes that wage gaps for slightly older male graduates narrowed as well, dropping from 30 percent to 13 percent for the 25-29 age group, and from 36 percent to 25 percent for the 30-34 age group between 1960 and 1970.

exactly the same quantity, quality, and type of schooling (Rumberger and Thomas, 1993; Weinberger, 1998; Joy, 2003).

Weinberger (1998) found, for example, that among 1984 college graduates one year out of college, black men earned only 90 percent as much as white men, while black women earned only 80 percent as much as white men. Weinberger's study of new college graduates places only a lower bound on the size of the typical gap since, within a given cohort, racial and gender wage gaps tend to grow with labor market experience (Fuller and Schoenberger, 1991; Wood, Corcoran and Courant, 1993; Light and Ureta, 1995; Oettinger, 1996; Keith and McWilliams, 1997, 1999; Dreher and Cox, 2000). Using a sample of new labor force entrants ensures that there are no large racial differences in prior labor force experience (since everyone has very little labor force experience), and allows us to control carefully for differences in the type and quality of college education. Adding very detailed controls for family background, college grade point average, college major and the exact educational institution attended does not reduce the estimated size of the unexplained gap faced by black men (Weinberger, 1998). The same set of controls does explain some of the gap faced by black women, but a 15 percent gap remains unexplained (Weinberger, 1998). Many scholars argue that persistent labor market discrimination is a factor in the remaining unexplained racial disparities (see Darity & Mason, 1998, for an overview).

In the study described above, none of the wage gap for black men, and very little of the wage gap for black women, is due to black graduates coming disproportionately from colleges or universities with lower-earning graduates (Weinberger, 1998). However, racial segregation across colleges persists. Even today, one quarter of all new black college graduates (but only 2% of all new U.S. graduates) are alumni of historically black colleges and universities (HBCU's).[3] While these institutions were originally founded to provide educational access to students who would otherwise have been barred from college, they continue to provide an environment conducive to the educational success of their students. The government study quoted above noted that in the 1940's many black students from the north chose to attend segregated southern colleges, and that doing so allowed them to avoid the difficulties students faced at the northern universities finding housing, food service, and a "normal social life." (U.S. Office of Education, 1942/1943). Contemporary observers (e.g. Nettles, 1988) note that HBCU's continue to provide students of color with a more nurturing social and educational environment while others (e.g. Steele, 1992) express concern about these students' eventual transition to an integrated workforce. Research has shown that HBCU's lead to better student outcomes on a number of measurable dimensions. ..These outcomes include lower attrition rates, shorter time to graduation, encouragement and academic support to pursue more challenging and remunerative college majors, and greater labor market success (Nettles, 1988; Trent and Hill, 1994; Ehrenberg and Rothstein, 1994; Constantine, 1995; Kane, 1998).[4] The most recent statistics suggest that HBCU's continue to produce superior outcomes. For example, in the year 2001 HBCU's accounted for 14 percent of black students enrolled in college in the U.S., but 24 percent of new black bachelor's degrees, as well as 14 percent of new graduate degrees.[5] Another sign of the success of HBCU's is that, despite this strong pattern of racial segregation, differences in the type of college or university attended were not an important factor in racial earnings gaps among recent college graduates in the 1980s or 1990s (Weinberger, 1998; Joy, 2003).

---

[3] The exact proportions are 24% for men and 23% for women, based on statistics available in tables 222 & 268 of the U.S. National Center for Education Statistics 2001 Digest of Education Statistics (NCES 2002).
[4] These studies compare students who enter college with similar observable characteristics.
[5] Computed from statistics in tables 208, 222, 268, 272, 275 & 278 of the National Center for Education Statistics *2001 Digest of Education Statistics* (NCES 2002).

Nonetheless, the typical black student who enrolls in a U.S. college or university is less likely than the typical white student to complete a college degree. During 1999, the ratio of bachelor's degree graduates to all enrolled college students was 6.7% among black men and 7.7% among black women, compared to 10.3% for white men and 10.8% for white women.[6] A racial gap in attrition remains even after adjusting for differences in family socioeconomic status and entrance exam scores (Tinto, 1993; Bowen and Bok, 1998). While some have faulted affirmative action admissions policies that allow a small number of lower scoring black students to enter the most selective universities, these policies may actually tend to improve graduation rates: Research has shown that, given the same entrance exam scores, students attending more selective colleges or universities are more likely to complete college (Kane, 1998). A more likely explanation of high attrition is offered by the groundbreaking work of Claude M. Steele, which demonstrated the susceptibility of students to reduced academic performance when reminded, even indirectly, of stereotypes about intellectual inferiority (Steele, 1992, 1995, 1997; Spencer, Steele and Quinn, 1999; Lustina et al., 1999). The implications of high rates of college attrition for labor market outcomes are unclear. What is certain is that individuals in the select group of African American young people with college degrees are particularly persistent and have withstood all of the trials that lead many to leave college before finishing. One might suppose the characteristics that lead to graduation despite all odds ought to predict superior outcomes in the labor market as well.In the fall of each year during the late 1990s, half a million black men and nearly one million black women were enrolled as undergraduates in U.S. colleges and universities. Over a four year period, 140,000 black men and 260,000 black women earned bachelor's degrees.[7] In light of the evidence that black college graduates have historically faced racial discrimination, and that government policies have worked to effectively reduce the effects of discrimination in the past, we believe it is important to continue to monitor the labor market success of new cohorts of black college graduates. This chapter describes racial earnings gaps among college graduates during the 1980s and 1990s. We explore whether the magnitudes of racial earnings gaps for college educated workers are changing over time, the extent to which observed gaps can be explained by differences in college major or the type of college attended, and the degree to which gaps vary across different segments of the labor market for college graduates.

We find that, although gaps faced by white women college graduates employed full-time were much smaller in the 1990s than in the 1980s, racial gaps among college graduates in the 1990s were virtually identical to those observed a decade earlier. Also, while they are relatively small soon after college graduation, these earnings gaps grow significantly over time. For example, among graduates in their 20's, black men earn about 10 percent less than white men, while among college graduates in their 30's, black men earn about 20 percent less, both in the 1980s and the 1990s. Earnings gaps faced by black women are even larger. We find some variation in these gaps across labor markets. They are, for example, relatively small among engineering majors of all ages, and large among business administration majors. However, in every field examined, racial and gender gaps are small among recent graduates, as compared to graduates in the 30-39 age range.

---

[6] The ratios were computed from statistics in tables 208, 268 & 269 of the National Center for Education Statistics *2001 Digest of Education Statistics* (NCES 2002).
[7] The four year period referred to here is academic year 1996-1997 through 1999-2000.

Description of the Statistical Analysis

In the statistical analysis, we focus on younger cohorts of workers who completed college after the passage of Title VII legislation. Although it might seem simple to find out whether black college graduates earn as much as similarly educated white graduates today, there is actually a limited number of detailed data sets that allow us to evaluate relative wages in a statistically meaningful way. This analysis pieces together information from four separate data sources. Each of these provides data on the earnings of representative samples of young U.S. college graduates, but each includes different additional information about the type or quality of their college education. We use all of these labor market snapshots to compare the earnings of black college graduates, both men and women, with the earnings of observably similar white male graduates.

First, the Current Population Surveys (CPS) [8], conducted by the U.S. Bureau of Labor Statistics, is the least detailed data set, but is useful because it covers the longest span of time. It contains monthly surveys of representative samples of the U.S. population throughout the last two decades. The CPS merged outgoing rotation files assembled by the National Bureau of Economic Research provide over 400,000 observations on full-time workers, aged 20-39, between 1980 and 2001. The second and most detailed study is the Baccalaureate and Beyond (B&B) longitudinal survey. The B&B, conducted by the U.S. National Center for Education Statistics, provides over 5000 observations on 1992-93 college graduates aged less than 30 and employed full-time in 1997. This study contains data on family background, educational attainment, work experience, and earnings in 1994 and 1997. The third and fourth data sets were collected by the National Science Foundation (NSF) as part of the SESTAT system.[9] The 1993 Survey of College Graduates (SCG) combines labor market data from the 1990 Census with detailed educational attainment data collected in 1993. [10] The SCG sample represents a cross-section of U.S. college graduates who earned their degrees before the 1990 census. It provides over 40,000 observations on full-time workers aged 20-39 in 1989. The Surveys of Recent College Graduates (SRCG) describe recent science and engineering graduates in 1995, 1997 and 1999.[11] The SRCG surveys provide over 12,000 observations on 20-30 year old full-time workers who are recent science and engineering bachelor's degree graduates.

All four surveys contain information about earnings, hours worked per week, geographic location, educational attainment, age, race and sex. All but the CPS also contain information about the date of college graduation, college major, fields of higher degrees earned, and the parents' educational attainment. Both of the recent graduate studies, B&B and SRCG, include information about each individual's college grade point average, and the B&B reveals the identity of the college attended.[12] For each survey, we present regressions estimating the relationship between the log of hourly earnings and factors expected to have an effect on earnings among workers employed full-time.[13] We also include indicator variables for black men, black women, and white women, to test

---

[8] We used the Merged Outgoing Rotation Files of the National Bureau of Economic Research.

[9] More information about SESTAT (Scientists and Engineers Statistical Data System) can be found at www.nsf.gov.

[10] The SCG is a survey of a random sample of 1990 Census respondents who reported they had a college degree. This study uses 1989 hourly earnings data taken from the 1990 Census with detailed information about educational attainment, work experience, and family background taken from the 1993 Survey of College Graduates.

[11] The SRCG surveys sample individuals who graduated between one and three years before the survey date with a major in science or engineering.

[12] A subset of B&B participants also have data on college entrance exam scores, which can be used as an additional control within this selected sample.

[13] All wage regressions are restricted to individuals employed at least 35 hours per week. Some specifications present the results using weekly or annual, rather than hourly, earnings . Month or year dummy variables are

(and usually reject) the hypothesis that black men and women earn the same wages as white male college graduates with the same observable characteristics.

Results of the Statistical Analysis

We begin by comparing racial gaps during the 1980-1990 period to those during the 1991-2001 period, using the CPS data. The more detailed SCG data on 1989 earnings allow us to then explore the extent to which observed earnings gaps can be explained by differences in family background, college major and other factors. The B&B data on 1997 earnings of 1993 college graduates allow us to examine whether any of the remaining gap (in a somewhat younger group of workers) can be explained by differences in college grade point average or the type of college or university attended. Finally, the B&B data on 1994 earnings of 1993 college graduates and the SRCG data on earnings of new science and engineering college graduates in 1995, 1997 and 1999 allow us to examine wage gaps among new cohorts of recent graduates.

Selected means for these samples of young college graduates employed full-time are presented in Tables 1-3. Table 1 displays means for the CPS samples. Here we see that during the 1980-1990 period black men's mean hourly earnings were 12 percent below those of white men. During the later 1991-2001 period, the gap rose slightly to 15 percent. Similarly, black men earned 16 percent less per week during the 1980s and 19 percent less per week during the 1990s. Black women faced an even larger 22 percent gap in hourly earnings and a 30 percent gap in weekly earnings, relative to white men, during both decades. The average earnings of white women were between those of black men and those of black women in both decades. Table 2 shows very similar gaps in the SCG data set, while Table 3 show much smaller gaps among the more recent college graduates in the B&B and SRCG data sets. Since these recent graduates are from a new cohort, it is impossible to determine whether the smaller gaps will grow in time to match those of the older cohorts, or whether gaps will continue to be small in this cohort.

In all samples described in Tables 1-3, white men are two to four times as likely as black women, and significantly more likely than black men, to work more than 50 hours per week. This difference poses a puzzle as to how to compare the earnings of two individuals, or groups, working very different numbers of hours per week. We chose to include a control for working more than 50 hours per week in all regressions. Under this specification, racial differences in weekly or hourly earnings will be correctly estimated if there is no discrimination. But if black workers are being systematically excluded from well-paid jobs with high weekly hours requirements, earnings gaps will be understated.[14]

The more detailed SCG sample (Table 2) shows other differences across demographic groups. Half of white graduates have at least one college-educated parent, compared to one-quarter of black students.[15] However, white graduates were not much more likely to have pursued graduate education.[16] There are also differences between

included in all regressions with earnings observed in more than one month or year, to control for changes in wage levels over time.

[14] Similarly, if black workers at a given salary work fewer hours per week due to lower future returns to long hours worked today, the racial gap in hourly earnings will understate the true differences in opportunities.

[15] In the B&B, smaller proportions of those employed full-time have at least one college educated parent in 1994 (one year after college graduation) than in 1997. This suggests that graduates with more family resources are likely to delay entry into the full-time labor force. Among the recent science and engineering graduates in the SRCG, wage levels are higher, and higher proportions of graduates have college educated parents (see Table 3).

[16] Note that differences between samples in the proportion with education beyond the bachelor's degree are primarily due to changes in the way the question was phrased.

groups in the distribution of college majors. Engineering or Computer Science majors account for 16 percent of white men, 11 percent of black men, and only 4 percent of black or white women. Business majors are the most common choice for all groups, accounting for 28 percent of white men, 25 percent of black men, 23 percent of black women, and 18 percent of white women. Education is no longer the predominant career path for black college graduates, but is still chosen by 9 percent of black men and 18 percent of black women, compared to 6 percent of white men and 20 percent of white women.[17] A disproportionate 15 percent of black women have college degrees in health professions, compared to 10 percent of white women, and 2 percent of men.[18]

Regression results for the CPS and SCG samples are shown in Table 4. The CPS data allowed for only a small number of control variables, including estimated work experience, working over 50 hours per week, education level, and geographic region. The earnings differences estimated with these controls are very similar to the differences in raw means described in Table 1. Columns 1 and 2 of Table 4 show little change in estimated racial wage differentials between the 1980s and the 1990s. During the 1980s, black men faced a 14 percent disadvantage in hourly earnings, while during the 1990's black men's estimated disadvantage was 16 percent. [19] The wage disadvantage faced by black women was larger, but fell slightly over this period, from 24 percent to 20 percent.[20] These are sizeable and persistent racial gaps in the hourly earnings of college graduates. In contrast, the earnings disadvantage faced by white women fell by 30 percent over the same period.[21]

Column 3 of Table 4 shows a regression using the same specification as columns 1 and 2, but using the SCG sample. Here, the wage gaps are 13 percent for black men, and 20 percent for black women,[22] which are similar to the estimates using the CPS samples. Columns 4, 5 and 6 use the same SCG sample but introduce more and more detailed controls. In column 4 we add a control for whether at least one parent has a college degree and control for the actual number of years of professional work experience, both full-time and part-time, as reported by the individual. This measure of experience is more precise than the one used in columns 1-3, which is based only on a person's age and education level.[23] These added controls reduce the estimated wage gaps to 9 percent for black men and 18 percent for black women. In column 5, we add controls for the individual's college major, because wage levels tend to vary by major. In column 6, we add even more information about an individual's narrowly defined college major, any double majors, college minors, and the fields of master's, Ph.D.'s, and professional degrees. As

---

[17] Using the earlier cohorts of the SCG data, we confirm that among those aged 40-59, a much larger proportion of college graduates majored in education. In this older cohort, fully 44 percent of black women, 37 percent of white women, 21 percent of black men and 10 percent of white men held undergraduate degrees in education.

[18] It is worth mentioning that only a miniscule number of African American students major in African American Studies, and even fewer do so without also pursuing a second major or a graduate degree in another field. The nationally representative SCG data set, with nearly 10,000 black college graduates surveyed in 1993, confirms that fewer than two-tenths of one percent of the (weighted) sample of black graduates held a bachelor's degree in ethnic studies and no other college degree. (The sample was weighted to control for the oversampling of scientists and engineers). More recent statistics from the National Center for Education Statistics (NCES) also show fewer than one percent of 1999-2000 black college graduates earning degrees in area or ethnic studies.

[19] Percent changes are computed as exp(b)-1, where b is the estimated coefficient. These estimates are from -0.147 log points and -0.169 log points, respectively.

[20] -0.269 log points and -0.229 log points, respectively.

[21] from –0.197 log points to –0.143 log points.

[22] -0.139 log points and -0.229 log points, respectively.

[23] The questions about actual part-time and full-time professional work experience were asked in the 1993 survey, while data on hourly earnings were, unfortunately, not available for 1993. Estimates of actual work experience as of 1989 were based on proportional scaling of the 1993 reports.

seen in the table, including broad controls for college major reduces the estimated wage gap, but adding extremely detailed controls for college major, as well as field of minors and higher degrees does not lead to significant reductions in the estimated wage gaps. These estimates, after the most detailed controls are included, are 8 percent for black men, 14 percent for black women, and 10 percent for white women.[24] All of these estimates are significant at the 1 percent level. Although the estimated wage gaps are smaller than those derived when fewer controls are included, they remain statistically and economically significant.[25]

It is possible that some fraction of the remaining differentials can be accounted for by differences in the quality of the educational institution attended. To examine this possibility, we turn to the most detailed dataset. Table 5 describes the results of regressions using the B&B survey of 1993 college graduates, resurveyed four years after college graduation. We begin with a regression using controls similar to the SCG regression in Table 4, column 5 (college major, parents' education, geographic region, working long hours, and pre-bachelor's degree work experience). Here we see similar gaps (about 10 percent) for black men, black women and white women. Because of the small sample size, the gap is not statistically significant for black men. Note that, for both black women and white women, the gap is statistically significant, but somewhat smaller than that seen with the SCG data in Table 4, column 5.[26] We hypothesize that this is because the graduates in the B&B sample are younger, and therefore at an earlier stage in their careers.

Columns 2 and 3 of Table 5 add more detailed controls not available in the other data sets. In column 2, adding controls for college grade point average slightly reduces the estimated racial disadvantage faced by black men and black women, but widens the estimated disadvantage faced by white women. In column 3, including controls for the exact educational institution attended has virtually no effect on the estimated disadvantage in hourly earnings for black or white women, and increases that for black men by a statistically insignificant amount (less than one-third of the standard error). This result confirms earlier research that inability to control for the type of college or university attended does not tend to bias estimated racial or gender gaps (Weinberger, 1998; Joy, 2003).[27]

Estimated earnings gaps were even smaller among very recent college graduates during the 1990s. When a similar set of regressions was run using the 1994 earnings of B&B participants only one year out of college,[28] no

---

[24] -.079 log points, -0.146 log points, and -.106 log points, respectively.

[25] Examining the gaps in weekly, rather than hourly, earnings shows similar patterns, but somewhat larger gaps, even after controlling for differences in the propensity to work more than 50 hours per week. For example, if weekly earnings are used in the specification of Table 4, Column 6, the gaps are -.086 for black men, -.174 for black women, and -.121 for white women.

[26] For the black men, the standard error in Table 5, column 1 is too large to draw any conclusions about how the gap compares to that of Table 4, Column 5.

[27] This would be the natural point at which to add controls for college entrance exam scores, which are available for about two thirds of the sample used in Table 5. However, it is not a representative sample of black men; when the regression of column 3 is restricted to the sample with entrance exam scores available, the number of black men drops to 65, and the estimated gap among the 65 remaining black men is only -0.039 (0.066), while the estimated gaps for white women and black women are similar to those in Table 5. Within this sample, adding entrance exam scores to the regression has virtually no effect on estimated wage gaps. The gap for black men falls only from -0.039 to -0.037 (0.066), the gap for black women falls only from -0.103 to -0.101 (0.041), and the gap for white women does not change from 0.092 (0.018). Hence, after controlling for school, college major and grade point average, controls for entrance exam scores do not have further explanatory power. It is unlikely that they would have more explanatory power in the smaller portion of the sample with no score data available.

[28] The data used here were from the 1994 B&B survey of 1993 college graduates surveyed one year out of college (n=4319, including 79 black men and 164 black women).

statistically significant racial gaps were found in any specification.[29] In the most detailed specification, white women earned a statistically significant 6 percent less than white men, while both black men and black women earned no less than white men with comparable characteristics.[30] Similarly, no racial wage gaps were found in the large SRCG sample of recent science and engineering graduates observed in the late 1990s, but white women earned a statistically significant 4 percent less than white men.[31] , To summarize: no racial wage gaps were observed among brand new college graduates during the 1990s, while white women faced a small but statistically significant disadvantage. But four years after college graduation, black (and white) women faced a statistically significant ten percent disadvantage. The small number of black men in this sample makes it difficult to pinpoint their exact disadvantage, but it falls (with high probability) into the five to twenty percent range four years after college graduation.[32]

We now turn to the question of whether racial gaps tend to be smaller among more recent cohorts of college graduates, and if so, whether racial gaps appear to be diminishing over time, or whether they are similar when comparing members of different cohorts at the same age. Table 6 provides comparisons between full-time workers in their 20's and in their 30's. Columns 1 and 2 of Table 6 compare full-time workers in their 20's to those in their 30's using the CPS observations from the 1980s, while columns 3 and 4 do the same thing using CPS observations from the 1990s.[33] Here it is very clear that although in both decades white women in their 30's faced larger gaps than those in their 20's, the size of those gaps fell by about 30 percent for both the older and younger workers. The net effect is that white women who were in their 20's during the 1980s and their 30's during the 1990s did not see much growth in their 15 percent disadvantage over time.

In contrast to the findings for white women, more recent cohorts of black men continue to experience a wage disadvantage nearly identical to that faced by previous cohorts at the same age. Black men in their 20's faced the same wage disadvantage in the 1980s and the 1990s, and black men who were in their 30's during the 1990s faced a slightly larger wage disadvantage than black men who were in their 30's in the 1980s. The result is that those who were in their 20's during the 1980s and their 30's during the 1990s saw their disadvantage double from 10 percent to 20 percent over the ten year period.

An entirely different pattern is observed for black women. While black women in their 30's faced the same very large wage disadvantage in the 1980s and 1990s, black women in their 20's fared much better during the 1990s

---

[29] As a check of robustness, we reran the B&B regressions for the sample of participants with wage data in both 1994 and 1997, and observed similar coefficients in both 1994 and 1997. This confirmed that the dramatic growth of wage gaps over the three year period is due to growth of the disadvantage faced by individuals, and not by entry into the full-time labor force by more disadvantaged individuals.

[30] The coefficients for both black men and black women were positive, although not statistically significant.

[31] Here the data were from 1995, 1997, and 1999 SRCG surveys of recent science and engineering graduates, observed 1-3 years after college graduation. The regression (not shown) included controls for pre-bachelor's degree and post-bachelor's degree work experience, college grade point average, working more than 50 hours per week, parent education, geographic region, cohort of graduation, and narrowly defined college major. (Because age is so highly correlated with experience among young recent grads, there is not a separate age control). The regression sample contained 12753 observations, including 859 black men and 977 black women.

[32] The point estimate is similar in magnitude to that faced by black women, but the standard error is large.

[33] The regressions in Table 6 use the same specification as Columns 1 and 2 of Table 4. We also looked at SCG regressions similar to those in Table 4, Column 6. (The sample was restricted to those who did not earn graduate degrees, and regressions control for narrowly defined college major, parents' education, actual work experience, geographic region and working long hours per week). Again, gaps were larger for those in their 30's than for those in their 20's, doubling or tripling in size for each of the three groups.

than during the 1980s. Black women who were in their 20's during the 1980s and in their 30's during the 1990s did not see much growth in their disadvantage over time—it remained about 25 percent over the ten year period. However, black women who were in their 20's during the 1990s faced a much smaller 15 percent wage differential, still large relative to the gap faced by black men or white women, but a great improvement relative to similar black women only one decade earlier. It is too soon to determine whether this improvement for the very youngest cohort of black women is part of a permanent trend. Overall, the observed racial pay differentials are remarkably stable when the 1980s are compared to the 1990s.

A final point we would like to note is that any estimate of racial gaps within the group of all college graduates may mask variation across labor market sectors. For example, Freeman (1976) noted the relatively small wage gaps faced by black engineers compared to college graduates in other professional or managerial occupations, even before enactment of the Civil Rights Act of 1964.[34] To update this example, we use the large, nationally representative SCG sample of college graduates to estimate racial wage gaps within selected categories of college majors.[35] Just as Freeman (1976) observed in 1959 data, we find smaller racial (and gender) gaps among college graduates trained as engineers.

In our first illustration of the variation of wage gaps across fields, we display regressions using only students from the two narrowly defined majors with the largest numbers of observations in the SCG, electrical engineering and business administration. Columns 1 and 2 of Table 7 show that in 1989 there were no statistically significant racial or gender gaps among college graduates in their 20's and 30's who were trained as electrical engineers. In contrast to these small gaps, columns 3 and 4 show large racial gaps—15 percent per week and per hour for black men, 25 percent per week and 21 percent per hour for black women—among those who majored in business administration.[36]

There are many possible explanations for the larger gaps faced by Business Administration majors. Perhaps black college students who go into electrical engineering are more like their white classmates than those who go into business. Perhaps there is more uniformity of curriculum or of labor market opportunities in electrical engineering. Or perhaps success in electrical engineering careers is more closely tied to skills learned in college. It is also likely that business majors simply face more labor market discrimination.[37] Whatever the reasons, these results illustrate that even if racial wage gaps diminish on average, there may be pockets of the labor market where very large gaps persist.

Table 8 generalizes this example by looking at wage gaps within each of 6 different broad categories of college major: Computer Science, Engineering, Math & Science, Business, Social Science & Humanities, and Education. These regressions restrict the sample to those aged 30-39 in 1989 in the SCG, all of whom entered college after passage of the Civil Rights Act of 1964. Regressions include controls for narrowly defined college major, parents' education, actual work experience, geographic region and working long hours per week. Again we

---

[34] Freeman (1976) saw a smaller race penalty among 25-35 year old college graduates who listed their profession as "engineer." With the SCG data, we are able to look at the full population trained as engineers, rather than being limited to only those employed as engineers.

[35] This is the same sample used in Table 4, Columns 4-6, but restricted to those with no graduate degrees, and to the specified college majors.

[36] Note that these are very narrowly defined majors; students with other types of engineering major (e.g. chemical, mechanical) and other types of business major (e.g. accounting, marketing, finance) are not included here.

[37] For eyewitness accounts, see "Black Corporate Executives" by Sharon Collins (1997). There is, to our knowledge, no comparable book on black engineers.

see large racial and gender gaps among business majors, and smaller gaps among engineers. Both black and white women engineers face gaps that are far from statistically significant, while the gap faced by black men is approaching statistical significance.[38] The new information provided in Table 8 is that the larger wage gaps observed among business administration majors are not very different than those observed in a wide array of broad college major categories. Black women face statistically significant gaps ranging from 15-25 percent in every broad major category except engineering. Black men and white women face statistically significant gaps in the 10-20 percent range in every broad major category except engineering and computer science.[39]

Conclusion

This chapter assembles evidence from a number of different data sources to create a picture of racial disparities in labor market outcomes among college graduates in their 20's and 30's during the period 1980-2001 in the U.S. Historically, black college graduates faced explicit, government sanctioned discrimination until the mid-1960s. Strictly enforced legislative changes reduced the racial wage gap faced by young black male college graduates from 30 percent to complete parity between 1960 and 1970 (Freeman,1976). However, sizeable racial gaps among young college graduates returned during the 1980's—about 15 percent for young black men (Bound and Freeman 1992).

The picture that emerges in this study is one in which racial gaps did not change between the 1980s and the 1990s for the typical worker in the 20-39 age range. During both the 1980-1990 and 1991-2001 periods, black men in their 20's and 30's earned about 15 percent less than white men, while black women earned about 25 percent less than white men. Among black men, the observed gaps were smaller among those in their 20's than among those in their 30's, but the relationship between age and earnings differentials was remarkably stable over the two decade period. Among black women, gaps tended to be large among both younger and older workers, although the youngest workers in the most recent cohort fared somewhat better

A portion of the observed racial differentials can be explained by differences in characteristics including college major, professional work experience, and parents' education. After controlling for these and other factors, black men in their 20's and 30's, on average, earn 8 percent less per hour and 9 percent less per week than white men, while black women earn 15 percent less per hour and 17 percent less per week. A closer look reveals that wage differentials vary by college major. For example, they are very small and not statistically significant for electrical engineering majors. However, college majors with small racial gaps are the exception rather than the norm.

Evidence from new surveys of recent college graduates find no unexplained racial pay differentials one or two years after college graduation in the 1990's. This is inconsistent with previous findings of significant gaps among new college graduates in the 1980's (Bound and Freeman 1992, Weinberger 1998), but similar to the

---

[38] Although not statistically significant at conventional levels (1%, 5%, or 10%), it is significant at the 11% level.
[39] The finding that only black women face a statistically significant wage penalty in computer science is also true for the independently drawn sample of SCG participants in the 20-29 age group. However, in the SRCG sample of recent college graduates, the earnings penalty faced by black men and black women is similar—10 percent per year for black men and 14 percent per year for black women (statistically significant for both black men and black women), 6 percent per hour for black men and 8 percent per hour for black women (statistically significant only when black men and black women are pooled). Among the SRCG recent graduates, computer science is the only broad major category with statistically significant racial gaps. No racial gaps among 1990s recent graduates are seen in the broad categories of engineering, math & science, or social science.

situation observed in 1970 (Freeman 1976). One survey of 1994 graduates shows that new black college graduates are not at a disadvantage immediately after graduation. However, the same sample resurveyed only three years later shows that wage differentials had begun to emerge that could not be explained by college major, college grade point average, the college or university attended or other observed factors. We speculate that enforcement of affirmative action or anti-discrimination policies is easiest and most effective during the recruitment of new college graduates, but that the idiosyncratic promotion policies of individual employers are less conducive to change.

In sum, there are very small, if any, racial differentials in earnings among comparable new graduates entering the labor market immediately after completing college. Yet racial differentials of significant size emerge over the next two decades of the college graduate's working life. The pattern has been extraordinarily stable for black men in their 20's and 30's over the past two decades. For black women, the even larger earnings disadvantage has improved somewhat for younger cohorts, although it is too soon to tell whether this change is permanent. For both men and women, the 10 to 20 percent difference in earnings over the first twenty years after college graduation calls for further explanation.

References

Bowen, William and Derek Bok. 1998. *The Shape of the River: Long-term Consequences of Considering Race in College and University Admissions*, Princeton University Press, Princeton New Jersey.

Bradbury, Katharine. 2002. "Education and Wages in the 1980s and 1990s: Are All Groups Moving up Together?" *New England Economic Review*, First Quarter 2002:19-46.

Card, David and Alan Krueger. 1992. "School Quality and Black/White Relative Earnings: A Direct Assessment," *Quarterly Journal of Economics* 107:151-200.

Card, David and Alan Krueger. 1996. "School Resources and Student Outcomes: An Overview of the Literature and New Evidence from North and South Carolina,:" *Journal of Economic Perspectives*,10(4):31-50.

Collins, Sharon. 1997. *Black Corporate Executives*. Temple University Press, Philadelphia.

Constantine, Jill. 1995. "The Effect of Attending Historically Black Colleges and Universities on Future Wages of Black Students." *Industrial and Labor Relations Review* 48(3):531-46.

Darity, William and Patrick Mason. 1998. "Evidence on Discrimination in Employment: Codes of Color, Codes of Gender," *Journal of Economic Perspectives*, 12(2):63-90.

Daymont, Thomas and Paul Andrisani, 1984. "Job Preferences, College Major and the Gender Gap in Earnings." *Journal of Human Resources*, 19(Summer):408-428.

Dreher, G. and T. Cox. 2000. "Labor market mobility and cash compensation: the moderating effects of race and gender". *Academy of Management Journal* 43(3) (October):890-900.

Ehrenberg, Ronald and Donna Rothstein. 1994. "Do Historically Black Institutions of Higher Education Confer Unique Advantages on Black Students?" In Ronald Ehrenberg, ed., *Choices and Consequences: Contemporary Policy Issues in Education*. Ithaca, New York: ILR Press.

Freeman, Richard B. 1976, *Black Elite: The New Market for Highly Educated Black Americans: A Report Prepared for the Carnegie Commission on Higher Education.* New York, McGraw-Hill.

Fuller, Rex and Richard Schoenberger. 1991. "The Gender Salary Gap: Do Academic Achievement, Internship Experience, and College Major Make a Difference?" *Social Science Quarterly*, 72(December):715-26.

Grogger, J. and E. Eide, "Changes in College Skills and the Rise in the College Wage Premium," *Journal of Human Resources*, 30(2), (1995):280-310.

Heckman, James. 1998. "Detecting Discrimination," *Journal of Economic Perspectives*, 12(2):101-116.

Joy, Lois. 2003. "Salaries of Recent Male and Female College Graduates: Educational and Labor Market Effects," *Industrial and Labor Relations Review* 56(3):606-621.

Kane, Thomas, 1998. "Racial and Ethnic Preferences in College Admissions," in *The Black-White Test Score Gap*, edited by Christopher Jencks and Meredith Phillips. Brookings Institution Press, Washington D.C.

Lustina, Michael J., Joshua Aronson, Catherine Good, Kelli Keough, Joseph Brown, and Claude M.Steele. 1999. "When white men can't do math: necessary and sufficient factors in stereotype threat." *Journal of Experimental Social Psychology* 35(1):29.

Meisenheimer, Joseph. 1990. "Black College Graduates in the Labor Market, 1979 and 1989." *Monthly Labor Review*, 113(11):31-21.

National Center for Education Statistics. 2002. *2001 Digest of Education Statistics*, Washington, D.C. U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics.

Nettles, Michael. 1988. *Toward Black Undergraduate Student Equality in American Higher Education*. Greenwood Press, Westport, Connecticut.

Oettinger, Gerald S. 1996. "Statistical Discrimination and the Early Career Evolution of the Black-White Wage Gap," *Journal of Labor Economics*, 14(1): 52-78.

Polachek, Solomon, 1978. "Sex Differences in College Major." *Industrial and Labor Relations Review*, 31(July):498-508.

Rumberger, Russell W. and Scott Thomas. 1993. "The Economic Returns to College Major, Quality, and Performance: A Multilevel Analysis of Recent Graduates." *Economics of Education Review*, 12(March):1-19.

Smith, James P. and Finis Welch. 1989. "Black Economic Progress after Myrdal." *Journal of Economic Literature*, 27(2):519-564.

Spencer, Steven J., Claude M. Steele, and Diane M.Quinn, 1999. "Stereotype Threat and Women's Math Performance." *Journal of Experimental Social Psychology* 35(1):4.-28.

Steele, Claude, 1992. "Race and the Schooling of Black Americans," *The Atlantic Monthly* 269(4):68-78.

Steele, Claude and Joshua Aronson. 1995. "Stereotype Threat and the Intellectual Test Performance of African Americans," *Journal of Personality and Social Psychology*, 69(5):797-811.

Steele, Claude. 1997. "A Threat in the Air How Stereotypes Shape Intellectual Identity and Performance," *American Psychologist*, 52(6):613-629.

Tinto, Vincent. 1993. *Leaving College: Rethinkig the Causes and Cures of Student Attrition* University of Chicago Press, Chicago.

Trent, William and John Hill. 1994. "Contributions of Historically Black Colleges and Universities to the Production of African American Scientists and Engineers," in Willie Pearson, Jr. and Alan Fechter, Eds., *Who will Do Science? Educating the Next Generation*, . Johns Hopkins University Press, Baltimore.

U.S. Office of Education. 1942/1943, "National Survey of the Higher Education of Negroes." Washington, D.C., Government Printing Office.

Weinberger, Catherine J. 1998. "Race and Gender Wage Gaps in the Market for Recent College Graduates." *Industrial Relations* 37(January):67-84.

Weinberger, Catherine J. 1999. "Mathematical College Majors and the Gender Gap in Wages." *Industrial Relations* 38(July):407-13.

Weinberger, Catherine J. 2001. "Is Teaching More Girls More Math the Key to Higher Wages?" in *Squaring Up: Policy Strategies to Raise Women's Incomes in the U.S.*, edited by Mary C. King. University of Michigan Press, Anne Arbor.

Wood, Robert G., Mary E. Corcoran, and Paul N. Courant. 1993. "Pay Differences among the Highly Paid: The Male-Female Earnings Gap in Lawyers' Salaries". *Journal of Labor Economics* 11(3) (July): 417-441.

Table 1--Sample Means for CPS
    (Current Population Surveys, Earnings observed in 1980-2001, Ages 20-39)
   (Standard deviations in parentheses)

	White men	Black men	Black women	White women
1980-1990				
Hourly Earnings	$12.70	$11.20	$9.80	$10.20
	(6.0)	(5.3)	(4.6)	(4.9)
Hourly earnings relative to white men	1.00	0.88	0.77	0.80
Weekly Earnings	$560	$470	$390	$430
	(270)	(230)	(190)	(210)
Weekly Earnings relative to white men	1.00	0.84	0.70	0.76
Hours worked per week	44.6	42.6	40.7	41.9
	(8.0)	(7.0)	(4.5)	(5.8)
>50 hours per week	0.26	0.15	0.07	0.13
Age	31.3	31.1	30.7	29.9
	(4.8)	(4.6)	(4.7)	(4.9)
Graduate Education	0.37	0.30	0.28	0.33
Proportion of weighted sample	0.55	0.03	0.04	0.38
N	121227	5931	8074	85409
1991-2001				
Hourly Earnings	$19.50	$16.60	$15.10	$16.10
	(10.2)	(8.9)	(7.5)	(8.2)
Hourly earnings relative to white men	1.00	0.85	0.78	0.83
Weekly Earnings	$890	$720	$620	$680
	(490)	(410)	(320)	(370)
Weekly Earnings relative to white men	1.00	0.81	0.70	0.77
Hours worked per week	45.5	43.3	41.2	42.5
	(8.3)	(7.5)	(5.6)	(6.3)
>50 hours per week	0.32	0.19	0.08	0.16
Age	31.6	31.9	31.3	30.5
	(4.7)	(4.7)	(4.8)	(4.9)
Graduate Degree	0.25	0.19	0.20	0.23
Proportion of weighted sample	0.50	0.04	0.05	0.41
N	91990	5448	8135	80292

Table 2 -- Sample Means for SCG
(Survey of College Graduates, Earnings observed in 1989, Ages 20-39)
(Standard deviations in parentheses)

	White men	Black men	Black women	White women
Hourly Earnings	$17.50	$14.90	$13.30	$13.80
	(10.5)	(8.2)	(6.5)	(7.4)
Hourly earnings relative to white men	1.00	0.85	0.76	0.79
Weekly Earnings	$810	$650	$540	$590
	(530)	(390)	(270)	(340)
Weekly Earnings relative to white men	1.00	0.81	0.67	0.73
Hours worked per week	46.2	44.5	41.3	42.8
	(8.2)	(8.3)	(5.8)	(6.5)
>50 hours per week	0.35	0.24	0.09	0.17
Age	32.1	32.4	31.8	31.2
	(4.5)	(4.4)	(4.5)	(4.7)
Years full-time professional work experience	8.4	7.9	7.6	7.3
	(4.7)	(4.7)	(4.8)	(4.6)
Years part-time professional work experience	0.7	1.0	0.7	0.8
	(1.6)	(1.8)	(1.6)	(1.7)
Undergraduate Major				
Business	.28	.25	.23	.18
Computer Science	.03	.04	.02	.02
Education	.06	.09	.18	.20
Engineering	.13	.07	.01	.02
Health	.02	.02	.15	.10
Humanities	.08	.06	.05	.09
Math or Science	.11	.09	.07	.07
Social Sciences	.11	.16	.16	.12
Master's Degree	.18	.15	.17	.20
Ph.D. or Professional Degree	.09	.05	.03	.05
College educated parent	.45	.25	.25	.48
Proportion of weighted sample	.54	.03	.04	.39
N	23542	2077	2912	13556

Table 3—Sample Means for B&B (Baccalaureate and Beyond Earnings observed in 1994 and 1997, 1 and 4 years after college graduation) and for SRCG (Surveys of Recent College Graduates, Science and Engineering Graduates Only, Earnings observed in 1995, 1997 or 1999, 1-3 years after college graduation)
(Standard deviations in parentheses)

	White men	Black men	Black women	White women
B&B 94				
Hourly Earnings	$10.20	$9.70	$9.90	$9.70
	(5.4)	(3.8)	(5.5)	(5.7)
Hourly earnings relative to white men	1.00	0.95	0.97	0.93
Hours worked per week	46.3	43.5	41.0	43.0
	(9.7)	(7.2)	(4.0)	(7.2)
>50 hours per week	.34	.22	.08	.19
Age at B.A./B.S. Graduation	23.1	23.1	23.2	22.5
	(2.2)	(2.1)	(2.4)	(2.1)
Parent college graduate	.36	.23	.22	.36
College gpa $\geq$ 3.25	.32	.14	.18	.46
Proportion of weighted sample	.32	02	.04	.46
N	1858	79	164	2115
B&B 97				
Hourly Earnings	$15.10	$13.60	$12.80	$13.10
	(7.0)	(6.0)	(4.2)	(4.9)
Hourly earnings relative to white men	1.00	0.90	0.85	0.87
Hours worked per week	48.0	47.1	42.6	44.4
	(9.4)	(9.6)	(6.0)	(7.2)
>50 hours per week	.45	.38	.15	.27
Age at B.A./B.S. Graduation	23.0	23.1	22.7	22.5
	(2.1)	(2.1)	(2.1)	(2.0)
Parent college graduate	.53	.43	.33	.52
College gpa $\geq$ 3.25	.32	.11	.17	.47
Master's Degree	.06	.03	.09	.08
Ph.D. or Professional degree	.03	.01	.02	.02
Proportion of weighted sample	.38	.02	.04	.45
N	2359	102	238	2604
SRCG 95, 97, 99 **Science and Engineering**				
Hourly Earnings	$13.20	$13.20	$12. 10	$11. 40
	(5.7)	(5.9)	(5.0)	(5.2)
Hourly earnings relative to white men	1.00	1.00	.92	.86
Hours worked per week	46.6	44.4	42.2	43.7
	(8.7)	(8.1)	(6.0)	(7.4)
>50 hours per week	0.36	0.26	0.16	0.22
Age	25.4	25.8	25.4	24.8
	(2.0)	(2.1)	(2.2)	(1.8)
Parent college graduate	.64	.55	.42	.64
College g.p.a. $\geq$ 3.25	.36	.16	.22	.51
Proportion of weighted sample	.52	.03	.04	.41
N	7010	859	977	3907

Table 4-Hourly Earnings Regressions, College Graduates Aged 20-39

	(1)	(2)	(3)	(4)	(5)	(6)
Data Source	CPS	CPS	SCG	SCG	SCG	SCG
Years of Earnings Observations	1980-1990	1991-2001	1989	1989	1989	1989
Black Men	**-0.147**	**-0.169**	**-0.139**	**-0.099**	**-0.076**	**-0.079**
	(0.007)**	(0.007)**	(0.012)**	(0.012)**	(0.012)**	(0.012)**
Black Women	**-0.269**	**-0.229**	**-0.229**	**-0.198**	**-0.157**	**-0.146**
	(0.005)**	(0.006)**	(0.010)**	(0.010)**	(0.010)**	(0.010)**
White Women	**-0.197**	**-0.143**	**-0.175**	**-0.164**	**-0.118**	**-0.106**
	(0.002)**	(0.002)**	(0.006)**	(0.006)**	(0.006)**	(0.007)**
Works >50 hours per week	-0.131	-0.033	-0.093	-0.106	-0.106	-0.108
	(0.003)**	(0.003)**	(0.008)**	(0.007)**	(0.007)**	(0.007)**
Work Experience[40]	0.061	0.068	0.064			
	(0.001)**	(0.001)**	(0.003)**			
Work Experience Squared	-0.002	-0.002	-0.002			
	(0.000)**	(0.000)**	(0.000)**			
College educated parent				0.025	0.024	0.018
				(0.006)**	(0.006)**	(0.006)**
Years part-time professional work experience				0.022	0.023	0.027
				(0.003)**	(0.003)**	(0.003)**
Years full-time professional work experience				0.072	0.069	0.069
				(0.002)**	(0.002)**	(0.002)**
Actual Experience Squared				-0.002	-0.002	-0.002
				(0.000)**	(0.000)**	(0.000)**
Observations	220641	185865	42087	42087	42087	42087
R-squared	0.26	0.22	0.17	0.22	0.26	0.29
Education Controls	>16 years ed.	Grad Degree	MA, Phd/Prof Degree	MA, Phd/Prof Degree	Broad BA Major, MA, Phd/Prof Degree	Narrow BA major, minors & double majors, fields of MA, Phd, and Prof. Degree

Robust standard errors in parentheses   * significant at 5%; ** significant at 1%

Dependent Variable: Log of Hourly Earnings
All regressions include 9 census region dummy variables. For CPS data, dummy variables indicating the month of observation were included to adjust for changes in wage levels over time.

---

[40] For columns 1-3, work experience was estimated as age-21, with controls for graduate education picking up the collinear effects of more education and less work experience. For columns 4-6, actual work experience as reported by respondent was used.

Table 5— Hourly Earnings Regressions (B&B 1993 College Graduates in 1997).

	(1)	(2)	(3)
Black Men	**-0.115**	**-0.099**	**-0.121**
	(0.065)	(0.065)	(0.069)
Black Women	**-0.116**	**-0.107**	**-0.106**
	(0.030)**	(0.030)**	(0.033)**
White Women	**-0.085**	**-0.095**	**-0.096**
	(0.015)**	(0.015)**	(0.015)**
>50 hrs per week	-0.058	-0.060	-0.070
	(0.016)**	(0.016)**	(0.015)**
Experience	0.010	0.009	0.006
	(0.003)**	(0.003)**	(0.003)**
Parent college grad	0.027	0.027	0.011
	(0.014)	(0.014)	(0.015)
Observations	4863	4863	4863
R-squared	0.13	0.14	0.30
Other controls:			
College gpa?	no	Yes	Yes
Region?	Yes	Yes	no
Institution Attended?	no	no	Yes

Dependent Variable: Log of 1997 hourly earnings

Sample: 1992-1993 bachelor's degree graduates working full-time in 1997

Table 6 -- Estimated Wage Gaps by Cohort and Decade (College Graduates, CPS).

	1980-1990 CPS		1991-2001 CPS	
	(1)	(2)	(3)	(4)
	Ages 20-29	Ages 30-39	Ages 20-29	Ages 30-39
Black Men	**-0.109**	**-0.171**	**-0.101**	**-0.205**
	(0.011)**	(0.009)**	(0.013)**	(0.009)**
Black Women	**-0.244**	**-0.286**	**-0.152**	**-0.272**
	(0.008)**	(0.007)**	(0.009)**	(0.007)**
White Women	**-0.150**	**-0.236**	**-0.10**	**-0.171**
	(0.003)**	(0.003)**	(0.004)**	(0.003)**
Observations	92476	128165	71558	114307
R-squared	0.22	0.19	0.18	0.14

**significant at 1% level.
Dependent Variable: Log of Hourly Earnings
Regressions include controls for estimated work experience, working over 50 hours per week, education level, and geographic region. Dummy variables indicating the month of observation were included to adjust for changes in wage levels over time. The sample is restricted to full-time workers.

Table 7 – Estimated Earnings Gaps among Bachelor's Degree Level College Graduates with Majors in Business Administration or Electrical Engineering, (SCG, 1989 Earnings, Ages 20-39).

	(1) electrical engineering	(2) electrical engineering	(3) business administration	(4) business administration
Dependent Variable:	Log Hourly Earnings	Log Weekly Earnings	Log Hourly Earnings	Log Weekly Earnings
Black Men	**-0.045**	**-0.072**	**-0.145**	**-0.152**
	(0.066)	(0.065)	(0.037)**	(0.035)**
Black Women	**-0.100**	**-0.100**	**-0.212**	**-0.254**
	(0.078)	(0.083)	(0.034)**	(0.034)**
White Women	**-0.006**	**-0.009**	**-0.116**	**-0.138**
	(0.036)	(0.037)	(0.026)**	(0.027)**
Observations	1512	1512	2291	2291
R-squared	0.30	0.33	0.21	0.29

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

All regressions include controls for working more than 50 hours per week, actual reported work experience (full and part-time), parent education, and geographic region.

Business administration regressions include 176 observations on black men and 236 observations on black women. Electrical engineering regressions include 72 observations on black men and 14 observations on black women.

Table 8 -- Estimated Earnings Gaps among Bachelor's Degree Level College Graduates aged 30-39 in 1989, by Broad College Major Category.

	Computer Science Majors	Engineering Majors	Math and Science Majors	Business Majors	Social Science and Humanities Majors	Education Majors
	(6)	(1)	(5)	(2)	(3)	(4)
Black Men	0.011	-0.087	-0.219	-0.137	-0.099	-0.115
	(0.067)	(0.054)	(0.052)**	(0.032)**	(0.046)*	(0.049)*
Black Women	-0.176	-0.035	-0.171	-0.247	-0.194	-0.230
	(0.088)*	(0.059)	(0.053)**	(0.028)**	(0.034)**	(0.041)**
White Women	-0.050	-0.047	-0.161	-0.149	-0.160	-0.175
	(0.054)	(0.036)	(0.033)**	(0.023)**	(0.027)**	(0.029)**
Observations	687	2892	1973	3559	2808	1781
R-squared	0.30	0.19	0.21	0.14	0.15	0.18

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Dependent Variable: 1989 Log of Hourly Earnings
All regressions include controls for narrowly defined college major within indicated category, working more than 50 hours per week, actual reported work experience (full and part-time), parent education, and geographic region.

Sample: SCG College Graduates age 30-39 with no graduate degrees, employed full-time.

Appendix: Construction of Earnings Measures

	Hourly Earnings	Weekly Earnings
CPS	(weekly earnings)/(usual hours per week)	Reported in survey
SCG	(1989 income)/ (1989 weeks worked * hours per week)	1989 annual income/ 1989 weeks worked
B&B	Annual earnings/(52*hours per week)	
SRCG	(annual salary)/ (weeks on which salary based * hours per week)	

Note—Earnings were not CPI-adjusted. Where observations from more than one month or year were included in a single regression, dummy variables for each month (CPS) or year (SRCG) controlled for changes in wage levels over time.